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UGC NET Physical Education
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UNIVERSITY GRANTS COMMISSION
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NET SYLLABUS

Subject : Physical Education **Code No. : 47**

Unit -I:

Physical education and adapted physical education, their objectives
Philosophies of education as applied to physical education

Development of Physical education in Greece, Rome, Sweden, Russia England, Denmark, Germany, USA, Australia and China.

Growth and development of physical education in India:

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Recreation- its principles, characteristics and importance. Modern trends in recreation. Indoor and outdoor recreational programmes. Recreational programmes for various categories of people.

Wellness- its importance, benefits and challenges. Development and maintenance of wellness.

Teaching Aptitude – nature, objectives, characteristics of teaching, learner characteristics and teaching methods.

Social aspects of sports- sports as a socializing agency, social values , sports leadership, sports as cultural heritage and social aspects of competition.

Ancient & Modern Olympics games, Asian and Commonwealth games.

Structure and functions of international and national bodies controlling various games and sports,. Prominent honours and awards in games and sports.

Unit -II:

Exercise physiology its scope and importance in the field of physical education and sports.

Cardio respiratory adaptations to long and short term physical activities.

Muscle- its types , characteristics and functions. Microscopic structure of muscle fibre. Sliding filament theory of muscular contraction. Types of muscle fibres and sports performance. Muscular adaptations to exercise.

Neuro-muscular junction and transmission of nerve impulse, kinesthetic Sense organs and neural control of motor skills.

Bio-chemical aspects of exercise - Metabolism of food products. Aerobic and anaerobic systems during rest and exercise. Direct and indirect methods of measuring energy cost of exercise.

Recovery process - Physiological aspects of fatigue. Restoration of energy stores. Recovery oxygen. Nutritional aspects of performance.

Environmental influence on human physiology under exercise.

Women in sports- trainability. Physiological gender differences and special problems of women athletes.

Aging - Physiological consequences, life style management and healthful aging.

Physiological responses of various therapeutic modalities and rehabilitation.

Physiological aspects of various Ergogenic aids. Massage manipulations and their physiological responses.

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Unit- III:

Kinesiology and biomechanics. Modern trends in biomechanics. Planes and Axes of human body. Joints and their movements.

Muscle attachments - Origin, insertion, action and leverage of the principal muscles used in sports.

Motion: its laws and their application in sports. Projectile and principles of projections

Linear and angular kinematics and kinetics.

Friction, Spin, impact and elasticity.

Air and water dynamics.

Mechanical advantage and applications of Levers in sports.

Posture and its deformities with their corrective exercises.

Kinesiological, Muscular and mechanical analyses of fundamental movements:

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Mechanical analyses of major sports skills

Unit – IV:

Sports psychology- its importance in the field of physical education and sports.

Motivation in sports- types, theories and dynamics.

Psychological factors affecting sports performance- Emotions, Anxiety aggression, stress ,self confidence, concentration , mental practice and goal setting.

Personality- Theories of personality, measurement of personality.

Group dynamics, Group cohesion and leadership in sports.

Cognitive process- memory and thinking. Principles of Motor skill learning.

Transfer of training and its types with its implication in sports.

Long and short term psychological preparation for performance/ competition.

Psychological skill training for activation and relaxation

Spectators and sports performance.

Unit -V:

Development of teacher education for physical education in India. Comparative study of professional preparation in physical education of India with those of USA, Russia, Germany, Australia and UK.

Professional and other courses of physical education in India. Role of Government agencies monitoring professional courses in physical education.

Qualities, qualifications and responsibilities of physical education personnel at primary, secondary and higher education levels. Scope of physical education personnel in the promotion of health, fitness and wellness.

Recent Government policies for promoting physical education and sports in India.

Hierarchy of organizational set-up in physical education at schools, colleges and university level.

Role of public & private sectors in the promotion of physical education and sports in the country.

Curriculum development- Concepts and principles of curriculum planning. Subject matter for different levels of education - primary, secondary and higher education.

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Curriculum design and content- importance, selection and classification of subject matter with reference to age, sex and differently abled pupils. Integrated programme for boys and girls.

Teaching aids - Time-table, Concepts, credit system for various subject courses- theory and practical, Impact of technology in physical education and sports,

Curriculum evaluation: Concepts and purpose; procedure and appraisal.

Unit -VI:

Health- its objectives and spectrum. Health education, its importance and principles . Role of genetics and environment in achieving health. Health-related physical fitness.

Community health programme- Health appraisal & health instructions. International and national health promoting government & private agencies.

School Health programme and personal hygiene.

Communicable diseases: causes, symptoms, prevention through other means and Immunization.

Psychosomatic disorders/ sedentary life style diseases : causes, symptoms and prevention.

Obesity related health problems. Body weight control and its significance on health. Role of exercise, dieting and combination of exercise & dieting on weight control.

First-aid- objectives and principles. First-aid for Shock, poisoning, burns, drowning, bleeding, electric shock and common sports injuries.

Pollution- Air, water, sound and radiation. Effects of pollution on health, Preventive and safety measures from pollution.

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Nutrition- Balanced diet and its components. Nutritional Deficiencies. Understanding of malnutrition and nutritional supplements.

Effects of smoking, alcohol, & drugs on health; prevention and rehabilitation.

Unit -VII :

Sports training- its characteristics and principles. Training load, its features, principles and adaptation process. Means and methods of executing training load. Overload, its Causes, symptoms and remedial measures.

Strength- its characteristics, types of strength, factors determining strength and strength development.

Endurance- its characteristics, types of endurance, factors determining endurance and endurance development.

Speed- its characteristics, types of Speed, factors determining Speed and speed development.

Flexibility-its characteristics, types of flexibility, factors determining flexibility and flexibility development.

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Coordinative abilities- its characteristics, types of coordinative abilities, factors determining coordinative abilities and development of coordinative abilities.

Technique and skill- its characteristics and importance. Different stages of technique development and technique training. Tactics and strategy.

Planning- its importance and principles. Types of planning.

Periodization- its importance, objectives and types of periodization. Concept of different periods - Preparatory, competition and transitional. Types of Competition:

Talent identification- process and procedure.

Unit -VIII:

Research in physical education- its importance and classification. Ethical issues in research.
Methods of research- Descriptive, historical and experimental. Experimental research designs.

Identification and formulation of research problem. Types of research hypotheses and their formulation. Hypotheses testing.

Tools of research- Questionnaires, opinionnaires, interviews and observation.

Sources and steps of literature search- library, research data bases, internet- search engines, online journals. Note taking and critical reading.

Sampling Techniques- Probability and non probability.

Data, its types and collecting measures.

Normal probability curve and grading scales.

Statistical processes, their importance and uses in research.
Application of parametric and non parametric statistical techniques in research.

Computer applications- statistical packages for data analyses- SPSS, e-mail, search engines and Microsoft office.

Preparation of research proposal, report, abstract, paper for publication and paper for presentation.

Unit - IX:

Test, measurement and evaluation -their types and importance in physical education and sports. Principles and processes of evaluation in physical education.

Criteria of selecting an appropriate test and administration of testing programme.

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Types of tests and construction of standard knowledge and skill tests.

Tests for fitness- Physical fitness, motor fitness, motor ability and motor educability. Health related fitness tests.

Test for fitness components- strength, endurance, speed, flexibility and coordinative abilities.

Sports skill tests- Badminton, Basketball, Football, Hockey, Tennis, and Volleyball.

Anthropometric Measurements- land marks and measurement of various body segments ,height, sitting-height, weight, diameters, circumferences, skinfolds, body mass index, ponderal index.

Somatotype and Posture evaluating techniques.

Testing of physiological phenomenons- Blood pressure, breathing frequency vital capacity, heart rate, pulse rate, body temperature and body composition.

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Tests for psychological variables- Anxiety, aggression, team cohesion, achievement motivation, mental-toughness, and self-efficacy.

Unit - X:

Management- its principles and theories. Scope of management in physical education and sports. Guiding principles for organizing physical education & sports programmes in institutions.

Personnel management- objectives and principles. Self-appraisal, communication skills and time management. Essential skills of administration.

Financial management- objectives, purposes, principles and scope. Planning and preparation of budget. Mechanics of purchase and auditing.

Supervision - objectives, principles and importance of supervision. Techniques of supervision. Duties and responsibilities of a supervisor.

Facility management- planning, procuring and maintenance of facilities- indoor and outdoor facilities. Planning and management of sports infrastructure. Management of records.

Role of sports manager- interpersonal, informational and decision making. Managerial skills – technical, human and conceptual. Qualities and qualification of sports manager.

Event management- its principles, planning, check list, rehearsal, itinerary, execution, reporting and follow-up procedures of an event.

Public relation- principles of public relations in physical education and sports. Mass Media- communication and publicity, qualifications of Public relation officer.

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CHAPTER 01
Foundations of Physical Education

1. Which of the following best defines Physical Education?
(A) A competitive focus on training elite athletes for professional international sports contests.
(B) A process for developing physically and socially fit citizens through diverse physical activities.
(C) A structured extracurricular system intended for student leisure and recreational entertainment.
(D) A comprehensive medical system for rehabilitating physical injuries through therapeutic exercise.

2. The primary objective of Adapted Physical Education is to:
(A) Provide physical activities modified for the individual capacities and limitations of students with special needs.
(B) Create an isolated athletic program designed to keep students with disabilities separate from others.
(C) Establish a rigorous training curriculum aimed at preparing students with disabilities for elite competition.
(D) Implement a formal policy intended to excuse students with diverse disabilities from all physical requirements.

3. Read the following statements and select the correct option.
Statement I : The philosophy of Pragmatism in physical education emphasizes learning through experience and problem-solving.
Statement II : A pragmatist teacher would use a fixed, unchangeable curriculum for all students regardless of their interests.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

4. In Ancient Greece, the city-state of Sparta primarily used physical education to develop:
(A) Aesthetically beautiful bodies and intellectual citizens.
(B) Skilled athletes for participation in the Pan-Hellenic games.
(C) Well-rounded individuals with a focus on democratic ideals.
(D) Strong and obedient soldiers for military supremacy.

5. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The development of physical education in Sweden, led by Per Henrik Ling, was systematic and based on scientific principles.
Reason (R) : Ling's system of gymnastics was divided into four parts: pedagogical, medical, military, and aesthetic, each with a specific purpose.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

6. The principle of recreation that suggests activities should provide a refreshing change from the demands of work life is known as the:
(A) Principle of wholesome activity.
(B) Principle of balance.
(C) Principle of democracy.
(D) Principle of carry-over value.

7. Which of the following is NOT a characteristic of recreation?
(A) It is entered into voluntarily.
(B) It provides immediate and inherent satisfaction.
(C) It occurs during leisure time.
(D) It is primarily motivated by extrinsic rewards

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and compulsion.

8. Match the items in List I with those in List II and select the correct option.
List I : (Philosopher/Pioneer)
P. Friedrich Ludwig Jahn
Q. Franz Nachtegall
R. Per Henrik Ling
S. Archibald Maclaren
List II : (Associated Country/System)
1. Sweden
2. England
3. Germany
4. Denmark
(A) P-3, Q-4, R-1, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-3, R-2, S-1
(D) P-3, Q-1, R-4, S-2

9. The concept of "Wellness" is best described as:
(A) The complete absence of any diagnosed physical disease or chronic medical infirmity.
(B) The ability to perform strenuous athletic tasks without experiencing physical fatigue.
(C) A process of making informed decisions to lead a more balanced and fulfilling life.
(D) A state of optimal physical health that excludes cognitive and emotional dimensions.

10. A major challenge in the development and maintenance of wellness in modern society is:
(A) The prevalence of sedentary lifestyles and processed foods.
(B) The decreasing availability of fitness information online.
(C) The lack of government initiatives promoting health.
(D) The high cost of basic medical check-ups.

11. Read the following statements regarding the objectives of physical education:
1. Development of organic fitness.
2. Development of neuro-muscular coordination.
3. Development of social qualities.
4. Development of emotional stability.
Which of the above statements are considered primary objectives of physical education?
(A) 1 and 2 only.
(B) 1, 2, and 3 only.
(C) 3 and 4 only.
(D) 1, 2, 3, and 4.

12. In the context of teaching aptitude, which characteristic is most essential for a physical education teacher?
(A) In-depth knowledge of only one specific sport.
(B) The ability to effectively demonstrate and communicate skills.
(C) A lenient attitude towards discipline and rules.
(D) A focus on theoretical knowledge over practical application.

13. Which of the following teaching methods involves the teacher making all decisions and the learners responding on cue?
(A) Problem-solving method
(B) Guided discovery method
(C) Command style
(D) Reciprocal style

14. Arrange the following events in the history of physical education in India in chronological order:
1. Establishment of the Lakshmibai National College of Physical Education (LNCPE).
2. Formation of the Hanuman Vyayam Prasarak Mandal (HVPM).
3. The recommendations of the Kunzru Committee.
4. The establishment of the YMCA College of Physical Education, Madras.
Which of the following is the correct sequence?
(A) 4, 2, 3, 1
(B) 2, 4, 3, 1
(C) 1, 4, 2, 3
(D) 2, 3, 1, 4

15. "Sports as a socializing agency" implies that participation in sports helps individuals to:
(A) Learn and internalize societal values, norms, and roles.
(B) Isolate themselves from societal norms.
(C) Earn a livelihood through professional sports.
(D) Focus solely on individual achievement over teamwork.

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16. Which social value is most directly promoted through team sports like basketball or football?
(A) Individualism
(B) Cooperation
(C) Solitude
(D) Financial gain

17. Read the following statements about modern trends in recreation:
1. Increased focus on adventure and outdoor pursuits.
2. Growing popularity of technology-based and virtual recreation.
3. A decline in the demand for community-based recreational programs.
4. Emphasis on wellness-oriented and therapeutic recreation.
5. A shift away from passive forms of entertainment.

Which of the above statement(s) is/are correct?
(A) 1, 2, and 3 only
(B) 1, 2, and 4 only
(C) 3, 4, and 5 only
(D) 1, 2, 4, and 5 only

18. The concept of 'sports as a cultural heritage' suggests that:
(A) Traditional and indigenous games reflect the history and values of a culture.
(B) Sports are a modern invention with no historical roots.
(C) Only internationally recognized sports have cultural value.
(D) The commercialization of sports erases its cultural significance entirely.

19. In the Ancient Olympic Games, the 'Pankration' was a combination of:
(A) Running and jumping.
(B) Discus and javelin throw.
(C) Boxing and wrestling.
(D) Chariot racing and horse riding.

20. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The motto of the Modern Olympic Games is "Citius, Altius, Fortius - Communiter".
Reason (R) : The motto was proposed by Pierre de Coubertin to represent the athletic goal of striving for excellence and the importance of coming together.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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21. The first Asian Games were held in 1951 in which city?
(A) Tokyo
(B) Jakarta
(C) New Delhi
(D) Manila

22. The Commonwealth Games are held for member nations of the Commonwealth of Nations. Which of the following is a key characteristic of these games?
(A) They are held every two years.
(B) They are often referred to as the "Friendly Games".
(C) Only countries from the Asian continent can participate.
(D) The opening ceremony is always presided over by the Prime Minister of India.

23. Which international body is the supreme authority for the Olympic Movement?
(A) International Association of Athletics Federations (IAAF / World Athletics)
(B) World Anti-Doping Agency (WADA)
(C) United Nations Educational, Scientific and Cultural Organization (UNESCO)
(D) International Olympic Committee (IOC)

24. In India, which national body is responsible for promoting sports at the grassroots to elite level, managing sports infrastructure, and implementing sports policies?
(A) Sports Authority of India (SAI)
(B) Indian Olympic Association (IOA)
(C) Board of Control for Cricket in India (BCCI)
(D) National Anti-Doping Agency (NADA)

25. The 'Arjuna Award' in India is conferred for:
(A) Lifetime contribution to sports coaching.
(B) Promoting sports in the corporate sector.
(C) Outstanding performance in sports and games over a period of four years.

(D) Excellence in sports journalism.

26. Which philosophy of education, when applied to physical education, emphasizes the importance of the individual's freedom, self-awareness, and personal responsibility in choosing activities?
(A) Existentialism
(B) Idealism
(C) Realism
(D) Naturalism

27. The 'Turnplatz' movement, which used apparatus like the parallel bars and horizontal bar to develop strong citizens, is associated with:
(A) Per Henrik Ling in Sweden.
(B) Franz Nachtegall in Denmark.
(C) Dr. Dudley Sargent in the USA.
(D) Friedrich Ludwig Jahn in Germany.

28. Match the items in List I with those in List II and select the correct option.
List I : (Term/Concept)
P. Learning by doing
Q. Development of the spirit and mind
R. Based on scientific facts and reality
S. Nature is the best teacher
List II : (Associated Philosophy)
1. Realism
2. Naturalism
3. Idealism
4. Pragmatism
(A) P-4, Q-3, R-1, S-2
(B) P-3, Q-4, R-2, S-1
(C) P-1, Q-2, R-3, S-4
(D) P-4, Q-1, R-2, S-3

29. The establishment of the YMCA College of Physical Education in Madras (now Chennai) in 1920 by Harry Crowe Buck was a significant milestone because it:
(A) Exclusively promoted indigenous Indian physical culture like Mallakhamb.
(B) Was a government-funded institution from its inception.
(C) Served as the first institution in India to offer formal teacher training.
(D) Focused only on training athletes for the Olympic Games.

30. Which of the following is the best example of an outdoor recreational programme?
(A) Playing chess in a community hall.
(B) A corporate yoga session in an office.
(C) Attending a pottery class indoors.
(D) Hiking and camping in a national park.

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31. Read the following statements regarding learner characteristics in a physical education setting:
1. Learners have varied physical abilities and fitness levels.
2. Learners' motivation can be either intrinsic or extrinsic.
3. Prior experience in sports has no impact on learning new skills.
4. Cognitive development of the learner affects their ability to understand rules and strategies.
Which of the above statement(s) is/are correct?
(A) 1, 2, and 3 only
(B) 2, 3, and 4 only
(C) 1, 2, and 4 only
(D) 1, 3, and 4 only

32. The "Dronacharya Award" is given to:
(A) Sportspersons for their lifetime achievement in sports.
(B) Coaches for their outstanding and meritorious work on a consistent basis.
(C) Universities for their all-round performance in sports.
(D) Officials and referees for fair play.

33. Which of the following is an INCORRECT statement regarding the social aspects of competition?
(A) Competition can motivate individuals to achieve higher levels of performance.
(B) Competition and cooperation are mutually exclusive and can never coexist in a sports setting.
(C) Unhealthy competition can lead to aggression, cheating, and poor sportsmanship.
(D) The outcome of competition (winning/losing) can significantly impact an athlete's social status.

34. The Olympic symbol of five interlaced rings represents the:
(A) Five continents united by Olympism.
(B) Five original sports of the ancient Olympics.
(C) Five founding members of the IOC.

(D) Five primary ideals: Citius, Altius, Fortius, Communiter, and Spiritus.

35. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Recreation is vital for the holistic well-being of an individual.
Reason (R) : Recreational activities help in releasing pent-up emotions, reducing stress, and providing a sense of refreshment and accomplishment.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

36. Which post-independence committee in India was instrumental in recommending the establishment of a central institution for physical education, leading to the formation of LNCPE Gwalior?
(A) The Radhakrishnan Commission
(B) The Kunzru Committee
(C) The National Policy on Education (1986)
(D) The Tara Chand Committee

37. A physical education teacher curriculum based on the philosophy of Realism would most likely emphasize:
(A) Activities that are based on the student's immediate interests and whims.
(B) The development of character and moral values through discussions and ideal examples.
(C) Programs based on scientific evidence, physiological principles, and measurable outcomes.
(D) Student-led discovery and free exploration without teacher guidance.

38. The term 'Agoge' in ancient Sparta refers to:
(A) The central marketplace where philosophical discussions took place.
(B) The state-sponsored military and educational training regimen for all male citizens.
(C) A form of dance performed during religious festivals.
(D) The council of elders that governed the city-state.

39. Arrange the following international sports events in the chronological order of their inception:
1. Modern Olympic Games
2. Asian Games
3. Commonwealth Games (as British Empire Games)
4. Ancient Olympic Games

Which of the following is the correct sequence?
(A) 4, 1, 3, 2
(B) 1, 4, 3, 2
(C) 4, 3, 1, 2
(D) 1, 2, 3, 4

40. Which of the following is NOT a dimension of wellness?
(A) Professional Wellness
(B) Physical Wellness
(C) Financial Wellness
(D) Emotional Wellness

41. In the context of social aspects, a sports leader's primary role is to:
(A) Ensure their team wins at all costs.
(B) Focus only on the most talented players.
(C) Motivate, guide, and foster a positive team environment and good sportsmanship.
(D) Handle the financial contracts of the players.

42. Read the following statements regarding the characteristics of teaching:
1. Teaching is a dynamic, social, and humane process.
2. It aims to bring about a change in the behavior of the learner.
3. Effective teaching is always authoritarian and teacher-centric.
4. Teaching is a continuous process of planning, implementing, and evaluating.
5. Teaching is an art as well as a science.

Which of the above statement(s) is/are correct?
(A) 1, 2, 3, and 4
(B) 2, 3, 4, and 5
(C) 1, 2, 4, and 5
(D) 1, 3, and 5

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43. The Roman civilization viewed physical training primarily for:
(A) Holistic development and aesthetic appreciation.
(B) Philosophical contemplation and intellectual pursuits.
(C) Health and fitness for all citizens, including women and children.
(D) Military preparedness and public spectacles (gladiatorial contests).

44. Read the following statements and select the correct option.
Statement I : The Indian Olympic Association (IOA) is responsible for selecting athletes to represent India at the Olympic Games, Asian Games, and other international multi-sport events.
Statement II : The Sports Authority of India (SAI) is the governing body for cricket in India.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

45. What is the most significant contribution of Denmark's Franz Nachtegall to physical education?
(A) He invented the sport of basketball for modern team competition.
(B) He led the 'Turnverein' movement with a specific nationalistic agenda.
(C) He introduced gymnastics into the curriculum and trained new teachers.
(D) He developed the scientific basis for advanced medical gymnastics therapy.

46. Which of the following correctly pairs an award with its field?
(A) Arjuna Award - Excellence in sports coaching.
(B) Dronacharya Award - Outstanding performance by a sportsperson.
(C) Rashtriya Khel Protsahan Puruskar - Lifetime achievement by an individual athlete.
(D) Major Dhyan Chand Khel Ratna Award - The highest honour for an Indian sportsperson.

47. A physical education teacher who believes in the philosophy of Naturalism would most likely:
(A) Use natural environments like parks and forests for activities, allowing for student exploration.
(B) Enforce a strict, uniform training schedule for all students.
(C) Focus on abstract ideals and the perfect form of movements.
(D) Emphasize problem-solving through group projects designed by the teacher.

48. Match the items in List I with those in List II and select the correct option.
List I : (Event)
P. Ancient Olympics
Q. Modern Olympics
R. Commonwealth Games
S. Asian Games
List II : (Key Feature)
1. Motto: "Ever Onward"
2. Held in honour of Zeus
3. Known as the "Friendly Games"
4. Revived by Pierre de Coubertin
(A) P-1, Q-3, R-4, S-2
(B) P-2, Q-4, R-3, S-1
(C) P-2, Q-1, R-3, S-4
(D) P-4, Q-2, R-1, S-3

49. Providing recreational programmes specifically designed for senior citizens primarily addresses their need for:
(A) High-intensity competitive sport.
(B) Social interaction, light physical activity, and mental stimulation.
(C) Professional career development.
(D) Extreme adventure and risk-taking.

50. The development of physical education in the USA was significantly influenced by:
(A) European immigrant gymnastic systems and the invention of basketball and volleyball.
(B) A strict, state-controlled military system similar to the one found in ancient Sparta.
(C) The complete rejection of all European models in favor of native athletic training.
(D) The preservation of native American games as the sole form of approved physical activity.

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51. Read the following statements about Adapted Physical Education (APE):
1. APE is a sub-discipline of physical

education.
2. The legal basis for APE in many countries is tied to disability rights and inclusive education laws.
3. The goal is to mainstream students into regular physical education without any support.
4. Assessment is a key component to determine individual needs and create an Individualized Education Program (IEP).

Which of the above statement(s) is/are correct?
(A) 1 and 3 only
(B) 2 and 4 only
(C) 1, 2, and 4 only
(D) 1, 2, 3, and 4

52. What is a key principle of 'Wellness'?
(A) Wellness is a static state that, once achieved, requires no further effort.
(B) Achieving wellness is solely the responsibility of doctors and healthcare providers.
(C) Wellness focuses only on the absence of disease, not on the quality of life.
(D) Wellness is multidimensional, encompassing physical, mental, social, and other aspects of life.

53. The 'guided discovery' method of teaching is characterized by:
(A) The teacher providing all answers and solutions directly.
(B) A complete lack of teacher involvement or structure.
(C) The teacher sequencing questions and tasks that lead the student to discover a concept or principle on their own.
(D) Learners imitating the teacher's movements without understanding the principles behind them.

54. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Sports can act as a powerful agent for social integration.
Reason (R) : By bringing together individuals from diverse social, economic, and ethnic backgrounds on a common platform, sports can help break down prejudices and foster mutual understanding.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

55. In the context of the historical development of physical education in India, what was the primary focus of the 'Akhara' system?
(A) Academic learning and philosophy.
(B) Preparation for modern Olympic sports.
(C) Leisure and recreational games for the community.
(D) Training in traditional forms of wrestling (Kushti) and physical culture.

56. Which of the following represents an indoor recreational activity?
(A) Board games
(B) Trekking
(C) River rafting
(D) Bird watching

57. The "Palaestra" in Ancient Athens was a:
(A) Venue for chariot races.
(B) School for military training for all citizens.
(C) Public building where wrestling and other physical training took place for boys.
(D) Place for philosophical debates for elders.

58. Which of these is NOT an objective of teaching?
(A) To encourage rote memorization without understanding.
(B) To impart knowledge.
(C) To develop skills.
(D) To shape attitudes and values.

59. The official motto of the Asian Games is:
(A) "Humanity, Friendship, Equality"
(B) "Citius, Altius, Fortius"
(C) "Passion, Share, the Future"
(D) "Ever Onward"

60. Arrange the recipients of the Major Dhyan Chand Khel Ratna Award in the chronological order of their receiving the award for the first time.
1. Sachin Tendulkar
2. Viswanathan Anand
3. Leander Paes

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4. Karnam Malleswari

Which of the following is the correct sequence?
(A) 2, 4, 3, 1
(B) 1, 2, 3, 4
(C) 2, 1, 4, 3
(D) 4, 3, 2, 1

61. Which of the following is an example of a recreational program for a special category of people, specifically persons with disabilities?
(A) A high-impact aerobics class for advanced athletes.
(B) A corporate cricket tournament.
(C) A wheelchair basketball league.
(D) A university-level debate competition.

62. The 'Philanthropinum', a school founded by Johann Bernhard Basedow in Germany, is significant in physical education history because it:
(A) Was the first school to make gymnastics a compulsory subject for all students.
(B) Exclusively trained students for high-intensity professional military service.
(C) Focused solely on the Swedish system of medical gymnastics for rehabilitation.
(D) Included a regimen of knightly exercises and manual labor in the curriculum.

63. Read the following statements about the social value of 'fair play' in sports:
1. It involves playing by the rules.
2. It includes respecting opponents and officials.
3. The primary goal is to win, even if it requires bending the rules.
4. It promotes an ethical and respectful approach to competition.
5. It is only relevant in individual sports, not team sports.

Which of the above statement(s) is/are correct?
(A) 1, 2, and 4 only
(B) 1, 3, and 5 only
(C) 2, 3, and 4 only
(D) 1, 2, 3, and 4

64. The development and maintenance of wellness is primarily a(n):
(A) Active and continuous process involving personal choices and responsibility.
(B) Passive process dependent on genetics.
(C) One-time event in a person's life.
(D) Responsibility of the government and public health system alone.

65. A physical education teacher asks students to create a new game with a specific set of equipment, defining their own rules and strategies. This approach aligns with which philosophy?
(A) Idealism, because it aims for a perfect game.
(B) Pragmatism, because it emphasizes problem-solving and experiential learning.
(C) Realism, because it uses real equipment.
(D) Naturalism, because it involves free play.

66. Read the following statements and select the correct option.
Statement I : The Commonwealth Games are organized every four years.
Statement II : All countries that were ever part of the British Empire are eligible to participate in the Commonwealth Games.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

67. The physical education system developed in Russia (former Soviet Union) was characterized by:
(A) A focus on individualism and complete freedom of choice in school sports.
(B) A rejection of scientific principles in favor of traditional physical training.
(C) A state-controlled system aimed at producing elite international athletes.
(D) An emphasis on recreational, non-competitive activities for leisure purposes.

68. Match the items in List I with those in List II and select the correct option.
List I : (Indian Sports Award)
P. Arjuna Award
Q. Dronacharya Award
R. Major Dhyan Chand Khel Ratna
S. Rashtriya Khel Protsahan Puruskar
List II : (Primary Purpose)
1. Honouring coaches
2. Honouring corporate entities & individuals for sports promotion
3. India's highest sporting honour for a player

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4. Consistent good performance by a player

(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-1, R-3, S-2
(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-3, R-2, S-1

69. In the context of Teaching Aptitude, 'learner characteristics' refer to:
(A) Only the physical attributes of the students.
(B) The teacher's personal traits and teaching style.
(C) The cognitive, affective, social, and physical traits of students that influence their learning.
(D) The administrative policies of the educational institution.

70. The "carry-over value" of recreation means that:
(A) The activity requires expensive equipment that must be carried.
(B) The skills and interests developed can be enjoyed throughout one's life.
(C) The activity is so strenuous that fatigue carries over to the next day.
(D) The memories of the activity can be carried for a short time.

71. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Idealism as a philosophy places a strong emphasis on the development of character and moral values in physical education.
Reason (R) : For an idealist, the teacher serves as a role model, and the curriculum is centered around perfect ideals and values.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

72. What was the 'Ekecheiria' or Olympic Truce in ancient Greece?
(A) A sacred period of peace ensuring safe travel for athletes and spectators.
(B) The final peace treaty that officially ended the Peloponnesian War.
(C) The formal oath taken by athletes to compete fairly and respectfully.
(D) The specific prize awarded to the victors of the ancient Olympic games.

73. The National Sports Federation of a particular sport in India is primarily responsible for:
(A) Overall implementation of all national sports policies.
(B) Conducting the National Games every year.
(C) The governance, promotion, and development of that specific sport across the country.
(D) Selecting the recipients of the Arjuna Awards.

74. Read the following statements regarding the history of Physical Education in England:
1. Early English sports like football and cricket developed from folk games with few formal rules.
2. The "Muscular Christianity" movement promoted physical activity for the development of character and manliness.
3. Archibald Maclaren was a key figure who advocated for the inclusion of physical training in the British Army.
4. England completely adopted the German Turnverein system without any modifications.

Which of the above statement(s) is/are correct?
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 2, and 3 only
(D) 1, 2, 3, and 4

75. Which objective of physical education is most concerned with the development of strength, speed, endurance, and flexibility?
(A) Organic development
(B) Social development
(C) Emotional development
(D) Neuro-muscular development

76. The modern pentathlon in the Olympic Games was designed to simulate the experience of:
(A) An ancient Greek warrior in battle.
(B) A 19th-century cavalry soldier behind enemy lines.
(C) A medieval knight in a tournament.
(D) A modern-day spy on a mission.

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77. An important characteristic of recreation is that it is 'pro-social' and 'wholesome'. This implies that the activity:
(A) Must be performed in a large social group.
(B) Is always competitive in nature.
(C) Is socially acceptable and contributes positively to society and the individual.
(D) Must generate a profit for the community.

78. The modern development of physical education and sports in China has been largely driven by:
(A) A desire to preserve traditional martial arts for cultural heritage.
(B) A focus on recreational sports with no emphasis on elite performance.
(C) The adoption of the Swedish model of medical gymnastics for schools.
(D) A state policy aiming for excellence in international competitions.

79. Read the following statements and select the correct option.
Statement I : Socialization into sport refers to the process by which individuals become interested and involved in sports.
Statement II : Socialization via sport refers to the learning of social values and norms that occurs as a consequence of sport participation.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

80. What is the primary role of the Indian Olympic Association (IOA)?
(A) To construct and maintain sports stadiums across the various states of India.
(B) To select teams for the Olympics and promote the Olympic movement.
(C) To act as the national governing body for all amateur sports across India.
(D) To directly coach and train professional athletes for international events.

81. Arrange the following ancient civilizations/ periods based on the primary emphasis of their physical training, from military-focused to more holistic/aesthetic:
1. Spartan Greece
2. Roman Empire
3. Athenian Greece

Which of the following is the correct sequence?
(A) 1, 2, 3
(B) 3, 2, 1
(C) 2, 1, 3
(D) 1, 3, 2

82. The term "Sports as cultural heritage" is best exemplified by:
(A) The continued practice of indigenous games like Mallakhamb in India or Kendo in Japan.
(B) The adoption of basketball in countries worldwide.
(C) The construction of modern, multipurpose stadiums.
(D) The use of advanced technology in sports broadcasting.

83. Consider the following scenario: A physical education teacher notices that a student with a mild physical disability is consistently hesitant to participate in group activities. The most appropriate first step based on the principles of Adapted Physical Education would be to:
(A) Force the student to participate in all standard activities to build grit.
(B) Allow the student to be permanently excused from every group requirement.
(C) Assess the student's needs and modify the activity for safe participation.
(D) Ask the other students to avoid passing the ball to the hesitant student.

84. Read the following statements regarding the characteristics of teaching:
1. It is a one-way transmission of information from teacher to student.
2. It involves creating a conducive environment for learning.
3. The objective is to help learners acquire knowledge and skills.
4. Evaluation is not an integral part of the teaching process.
5. It is influenced by the social and cultural context.

Which of the above statement(s) is/are correct?
(A) 1, 3, and 4
(B) 2, 3, and 5
(C) 1, 4, and 5
(D) 2, 4, and 5

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85. Which of the following is NOT an aim of Physical Education?
(A) To achieve holistic development.
(B) To make an individual physically, mentally, and socially fit.
(C) To prepare individuals for sedentary desk jobs.
(D) To foster the worthy use of leisure time.

86. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The revival of the Modern Olympic Games in 1896 was a significant event in the history of international sport.
Reason (R) : The games were revived solely for the financial benefit of the host city, Athens.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

87. The Hanuman Vyayam Prasarak Mandal (HVPM) at Amravati played a crucial role in the development of physical education in India by:
(A) Exclusively promoting western sports like cricket and football for youth.
(B) Functioning as the official sports authority of the British Indian government.
(C) Being the first institution to award higher degrees in physical education.
(D) Synthesizing traditional Indian culture with modern methods for promotion.

88. The most appropriate objective for a recreational program designed for corporate employees is:
(A) To provide a break from work, reduce stress, and promote team building.
(B) To identify and train professional athletes from the workforce.
(C) To ensure employees work longer hours by keeping them at the office.
(D) To conduct high-risk adventure sports to test their physical limits.

89. Match the items in List I with those in List II and select the correct option.
List I : (Concept)
P. Wellness
Q. Recreation
R. Adapted Physical Education
S. Socialization
List II : (Description)
1. Voluntary activity during leisure for satisfaction
2. Modified physical activity for individuals with disabilities
3. The process of learning societal norms and values
4. A multi-dimensional state of well-being
(A) P-4, Q-1, R-2, S-3
(B) P-1, Q-4, R-3, S-2
(C) P-4, Q-2, R-1, S-3
(D) P-3, Q-1, R-2, S-4

90. Which of the following is an example of a passive recreational activity?
(A) Watching a movie.
(B) Playing a game of tennis.
(C) Going for a swim.
(D) Participating in a dance class.

91. The philosophy of Idealism, when applied to physical education, would value which of the following most highly?
(A) The score of the game.
(B) The physiological benefits of the exercise.
(C) The discovery of new game strategies by students.
(D) The development of sportsmanship and character.

92. The motto of the Commonwealth Games Federation is "Humanity, Equality, Destiny". This reflects the games' emphasis on:
(A) Intense rivalry and national superiority.
(B) Bringing together a diverse group of nations in a spirit of friendship and fair competition.
(C) Commercial success and media rights.
(D) Political and diplomatic negotiations.

93. The physical education program in Ancient Athens for citizens, as compared to Sparta, was more:
(A) Focused on military training from birth.
(B) Brutal and centered on spectator sports.
(C) Balanced, aiming for a harmony of mind (music and literature) and body (gymnastics).
(D) Non-existent, as they valued philosophy

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over physical prowess.

94. The 'Major Dhyan Chand Khel Ratna Award', formerly known as the Rajiv Gandhi Khel Ratna Award, is awarded for:
(A) Lifelong contribution to the promotion of sports.
(B) Excellence in coaching for more than two decades.
(C) The best overall performance by a university in sports.
(D) The most spectacular and outstanding performance by a sportsperson over a period of four years.

95. Read the following statements regarding the development of physical education in the USA:
1. The invention of basketball by James Naismith provided a less strenuous indoor game.
2. The German and Swedish gymnastics systems had no influence on American physical education.
3. Clark Hetherington is known for his "New Physical Education" which focused on the whole child.
4. The playground movement was a significant social reform to provide safe play spaces for children.

Which of the above statement(s) is/are correct?
(A) 1 and 2 only
(B) 2 and 4 only
(C) 1, 3, and 4 only
(D) 1, 2, 3, and 4

96. A key benefit of maintaining wellness is:
(A) A guaranteed increase in income.
(B) Enhanced quality of life and reduced risk of chronic diseases.
(C) The complete elimination of all life stressors.
(D) The ability to outperform professional athletes.

97. Read the following statements and select the correct option.
Statement I : The command style of teaching is highly effective for teaching complex strategies and decision-making skills.
Statement II : The command style of teaching is most suitable for teaching simple drills, ensuring safety, and when uniformity of movement is required.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is false, but Statement II is true.
(D) Statement I is true, but Statement II is false.

98. The structure and functions of international bodies like FIFA or FIBA primarily involve:
(A) Setting and enforcing the international rules of their respective sports, and organizing world championships.
(B) Directly managing the day-to-day training of national teams.
(C) Providing pensions to retired athletes.
(D) Lobbying national governments on political issues.

99. The social aspect of competition becomes negative when:
(A) Athletes strive to improve their personal best performance.
(B) The competition is used to foster international goodwill.
(C) The focus on winning overrides principles of fair play and respect for opponents.
(D) The rules of the game are clearly defined and followed by all.

100. Who is considered the "Father of the Modern Olympic Games"?
(A) Per Henrik Ling
(B) Dr. William Penny Brookes
(C) Friedrich Ludwig Jahn
(D) Pierre de Coubertin

101. The objective of neuro-muscular development in physical education aims to:
(A) Improve the functioning of the heart and lungs through aerobic activity.
(B) Foster positive social behaviors like teamwork and consistent leadership.
(C) Enhance coordinated movement by improving nervous and muscular links.
(D) Develop emotional control under pressure in competitive sports settings.

102. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The 'Playground Movement' in the USA was a social reform initiative.

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Reason (R) : It aimed to provide safe, supervised play spaces for children in crowded urban areas to combat social ills and promote healthy development.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

103. Which of the following is NOT a prominent honour or award in games and sports in India?
(A) Arjuna Award
(B) Dronacharya Award
(C) Major Dhyan Chand Khel Ratna Award
(D) Param Vir Chakra

104. A recreational program that includes activities like trekking, rock climbing, and river rafting falls under the category of:
(A) Adventure recreation
(B) Indoor recreation
(C) Passive recreation
(D) Therapeutic recreation

105. Arrange the following historical phases/ movements in physical education in the correct chronological order of their emergence.
1. German Turnverein Movement
2. Athenian Physical Education (Golden Age)
3. Swedish Gymnastics System
4. American "New Physical Education" Movement

Which of the following is the correct sequence?
(A) 2, 1, 3, 4
(B) 1, 2, 3, 4
(C) 2, 3, 1, 4
(D) 4, 3, 2, 1

106. The philosophy of physical education in contemporary Australia and China, despite their different political systems, shares a common emphasis on:
(A) The pursuit of excellence in elite international sport.
(B) The complete rejection of competitive sports.
(C) A focus solely on traditional and indigenous games.
(D) The prohibition of physical education in schools.

107. Which statement best reflects the importance of recreation?
(A) It is an unproductive use of time that should be minimized.
(B) It is only important for children and has no value for adults.
(C) It is a luxury that only the wealthy can afford.
(D) It is essential for mental and physical rejuvenation, personal growth, and social bonding.

108. Read the following statements regarding desirable characteristics of a physical education teacher:
1. Mastery over the subject matter.
2. Good communication skills.
3. An authoritarian and rigid attitude.
4. Enthusiasm for teaching.
5. Empathy and understanding towards learners.

Which of the above statement(s) is/are correct?
(A) 1, 2, 3, and 4
(B) 2, 3, 4, and 5
(C) 1, 2, 4, and 5
(D) 1, 3, and 5

109. What does the term 'cultural heritage' in the context of sports primarily refer to?
(A) The specific amount of annual revenue generated by a major professional sport.
(B) The various uses of modern technology in current international sports broadcasting.
(C) Traditional games and physical activities passed down through societal generations.
(D) The universal rules of modern international sports like football or tennis games.

110. The first Commonwealth Games were held in 1930 in Hamilton, Canada, under the name:
(A) The Inter-Empire Championships
(B) The Friendly Games
(C) The Pan-Britannic Games
(D) The British Empire Games

111. In adapted physical education, an Individualized Education Program (IEP) is crucial because it:
(A) Outlines specific goals, services, and modifications for students with special

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needs.
(B) Mandates that all students with disabilities perform the exact same team activities.
(C) Functions as a standard fitness plan for every student across the entire school.
(D) Focuses exclusively on the student's physical weaknesses rather than their strengths.

112. Read the following statements and select the correct option.
Statement I : The social value of leadership can be developed through sports by giving athletes opportunities to take on roles like team captain.
Statement II : A sports leader's role is limited to on-field strategy and does not involve mentoring or motivating team members.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

113. The 'Ready, Go' system ('Got-och-Vel-vilja') was a feature of the state-directed physical education program of which country?
(A) Denmark
(B) Russia (Soviet Union)
(C) Germany
(D) Sweden

114. The concept of 'Wellness' goes beyond 'Health' by emphasizing:
(A) A proactive and holistic approach to achieving one's full potential.
(B) The medical treatment of physical diseases after they have occurred.
(C) The development of the physical dimension of human life exclusively.
(D) A static state of being that is defined solely by medical professionals.

115. Match the items in List I with those in List II and select the correct option.
List I : (Country)
P. Germany
Q. Sweden
R. USA
S. India
List II : (Key Figure/Concept in physical education History)
1. Clark Hetherington
2. Harry Crowe Buck
3. Friedrich GutsMuths
4. Hjalmar Ling
(A) P-3, Q-4, R-1, S-2
(B) P-4, Q-3, R-2, S-1
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-4, R-1, S-3

116. The objective of emotional development in physical education focuses on helping individuals to:
(A) Suppress all emotions during competition.
(B) Achieve a high level of cardiovascular endurance.
(C) Learn the complex rules of various sports.
(D) Develop control over their emotions and express them in a socially acceptable manner.

117. Which of the following is an INCORRECT pair?
(A) Greece - Palaestra
(B) Rome - Thermae
(C) Sweden - Akhara
(D) Germany - Turnplatz

118. The "Rashtriya Khel Protsahan Puruskar" is awarded to:
(A) Individual athletes for their performance in a single year.
(B) Corporate entities and individuals who have played a visible role in the area of sports promotion and development.
(C) Coaches who have produced medal winners at international events.
(D) Retired athletes for their lifetime contribution.

119. In Ancient Greece, women's participation in sports was most prominent in:
(A) Athens, where they trained alongside men in the gymnasium.
(B) The Olympic Games, where they competed in all events.
(C) Corinth, where they focused on aquatic sports.
(D) Sparta, where girls also underwent physical training to become strong mothers.

120. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : A pragmatist approach to

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physical education would favor a flexible, experience-based curriculum.
Reason (R) : Pragmatism holds that reality is fixed and unchangeable, and knowledge is gained through an understanding of timeless ideas.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

121. One of the main challenges to promoting wellness is the 'information overload'. This refers to:
(A) The complete lack of health-related information available to the public.
(B) The high cost of accessing wellness centers and professional healthcare.
(C) Contradictory health advice that makes it difficult to make informed choices.
(D) The government's formal ban on health-related publications and journals.

122. A key characteristic of a good teaching method in physical education is that it should be:
(A) Appropriate for the specific learning objective, the learners' abilities, and the available resources.
(B) The same for all students, regardless of skill level or age.
(C) Focused exclusively on theoretical lectures.
(D) As difficult as possible to challenge the students.

123. Read the following statements regarding the Asian Games:
1. They are a multi-sport event held every four years among athletes from all over Asia.
2. The games are regulated by the Olympic Council of Asia (OCA).
3. The first Asian Games were held in Tokyo, Japan.
4. The motto of the Asian Games is "Ever Onward".

Which of the above statement(s) is/are correct?
(A) 1, 2, and 4 only
(B) 1, 3, and 4 only
(C) 2 and 3 only
(D) 1, 2, 3, and 4

124. The socialization process in sports is considered successful when an individual:
(A) Wins every game they play.
(B) Internalizes values like sportsmanship, teamwork, and discipline.
(C) Receives a professional contract.
(D) Learns to bend the rules without getting caught.

125. Who among the following is known as the 'Grandfather of German Gymnastics'?
(A) Friedrich Ludwig Jahn
(B) Adolph Spiess
(C) Johann Christoph Friedrich GutsMuths
(D) Johann Bernhard Basedow

126. Which of the following is an objective of physical education related to social development?
(A) Improving reaction time.
(B) Increasing lung capacity.
(C) Understanding the laws of motion.
(D) Developing leadership qualities and respect for others.

127. Read the following statements and select the correct option.
Statement I : The primary aim of recreation is to win competitions and earn prize money.
Statement II : Recreation is characterized by its voluntary nature and the personal satisfaction it provides.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is false, but Statement II is true.
(D) Statement I is true, but Statement II is false.

128. The modern development of physical education in Denmark was pioneered by Franz Nachtegall, who was inspired by the work of:
(A) Per Henrik Ling of Sweden.
(B) Johann Christoph Friedrich GutsMuths of Germany.
(C) Archibald Maclaren of England.
(D) Pierre de Coubertin of France.

129. Match the items in List I with those in List II and select the correct option.
List I : (Term)
P. Teaching Aptitude
Q. Learner Characteristics
R. Wellness

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S. Cultural Heritage

List II : (Meaning in physical education context)

1. Holistic well-being
2. Traits of students affecting learning
3. Traditional sports of a society
4. Potential and competence for teaching

(A) P-1, Q-3, R-2, S-4
(B) P-4, Q-2, R-1, S-3
(C) P-2, Q-4, R-3, S-1
(D) P-4, Q-1, R-2, S-3

130. The "reciprocal style" of teaching in physical education involves:
(A) Students working in pairs to perform skills and provide feedback to each other.
(B) The teacher dictating every single move and the students following on cue.
(C) Students discovering solutions to various physical problems independently.
(D) A formal lecture-based session on the complex history of a particular sport.

131. In the context of Ancient Roman history, 'Ludi Romani' were:
(A) Military training camps.
(B) Philosophical schools.
(C) Public games and festivals that included chariot races and theatrical performances.
(D) Private gymnasia for the wealthy.

132. The establishment of the Sports Authority of India (SAI) in 1984 was a major step towards:
(A) The privatization of all sports and athletic facilities throughout the country.
(B) Organizing the Indian Premier League (IPL) for professional cricket teams.
(C) Granting university status to all independent physical education institutions.
(D) Promoting sports and managing sports infrastructure throughout India.

133. Read the following statements regarding the principles of recreation:
1. Recreation should be voluntary.
2. It must be a business-oriented activity.
3. It should provide a sense of satisfaction.
4. It should be socially acceptable.
5. It should only involve physically strenuous activities.

Which of the above statement(s) is/are correct?
(A) 1, 2 and 3
(B) 1, 3 and 4
(C) 2, 3 and 5
(D) 1, 4 and 5

134. Which of the following is a key function of a National Olympic Committee, such as the IOA?
(A) To set the international rules for every sport.
(B) To develop and protect the Olympic Movement in its country.
(C) To directly fund and construct all public stadiums.
(D) To act as a court of law for sports-related disputes.

135. A physical education program influenced by Existentialism would emphasize:
(A) A standardized fitness test designed for every student to take simultaneously.
(B) A specific curriculum based on traditional and classic international sports.
(C) The achievement of measurable and performance-based academic objectives.
(D) Student choice and finding personal meaning in diverse physical activities.

136. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) : The social environment of a competition can influence an athlete's behavior and ethical choices.

Reason (R) : An over-emphasis on winning by coaches, parents, and peers can pressure an athlete to engage in unsportsmanlike conduct.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

137. Which of the following is what best describes the historical development of physical education in England?
(A) It was a state-controlled system from the very beginning of its history.
(B) It was a direct copy of the Swedish gymnastics system for all schools.
(C) It grew out of public school games influenced by Muscular Christianity.
(D) It focused entirely on military drills and

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ignored the development of sports.

138. The women's marathon was included in the Modern Olympic Games for the first time in:
(A) 1984, Los Angeles
(B) 1896, Athens
(C) 1928, Amsterdam
(D) 2000, Sydney

139. A teacher uses a variety of teaching methods (command, practice, reciprocal) within a single lesson. This demonstrates the teaching characteristic of:
(A) Rigidity
(B) Apathy
(C) Authoritarianism
(D) Flexibility and adaptability

140. Arrange the following awards in the order of their institution by the Government of India.
1. Arjuna Award
2. Major Dhyan Chand Khel Ratna Award
3. Dronacharya Award
4. Maulana Abul Kalam Azad (MAKA) Trophy

Which of the following is the correct sequence?
(A) 4, 1, 3, 2
(B) 1, 4, 2, 3
(C) 4, 3, 1, 2
(D) 1, 2, 3, 4

141. The primary difference between 'physical education' and 'recreation' is that:
(A) Physical education is only for children, while recreation is only for adults.
(B) Physical education always involves competition, while recreation never does.
(C) PE is curricular and educational, while recreation occurs in leisure time.
(D) Physical education is free, while recreation is always very expensive for all.

142. The philosophy of Realism applied to physical education would suggest that the curriculum be based on:
(A) The personal opinions and interests of the students.
(B) The development of an ideal character and sportsmanship.
(C) The historical significance of ancient sports.
(D) Scientific facts, data, and the physiological effects of exercise.

143. Which of the following is NOT a function of the International Olympic Committee (IOC)?
(A) To decide the rules for each individual sport.
(B) To select the host city for the Olympic Games.
(C) To promote the fundamental principles of Olympism.
(D) To lead the fight against doping in sport.

144. Read the following statements regarding historical physical education development:
1. In Sparta, physical education was for the state's military needs.
2. In Athens, the goal was a balanced development of mind and body.
3. Roman physical education focused on military training and public spectacles.
4. Swedish gymnastics, developed by Ling, was primarily for aesthetic purposes.

Which of the above statement(s) is/are correct?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 2, 3, and 4 only
(D) 1, 2, 3, and 4

145. The term 'social values' in the context of sports refers to:
(A) The monetary value of a sports team.
(B) The principles and standards of behavior, such as honesty, teamwork, and discipline, learned through sports.
(C) The social media following of an athlete.
(D) The ticket prices for a sporting event.

146. A major benefit of engaging in regular recreational activities is:
(A) Improved mental health and stress reduction.
(B) A guaranteed professional sports career.
(C) The prevention of all forms of injury.
(D) A decrease in social skills.

147. Read the following statements and select the correct option.
Statement I : The Kunzru Committee (1959) in India reviewed the state of physical education and sports and made several recommendations for their improvement.
Statement II : One of the key recommendations of the Kunzru Committee was to abolish physical education as a compulsory subject in schools.

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(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

148. A teacher's ability to understand a learner's background, motivation, and learning style falls under the category of:
(A) Subject matter expertise.
(B) Classroom management skills.
(C) Curriculum design.
(D) Understanding learner characteristics.

149. The introduction of 'mass drills' and synchronized physical activities in the former Soviet Union's physical education system was intended to:
(A) Promote individuality and complete freedom of personal expression.
(B) Provide a relaxing, stress-free environment for various student groups.
(C) Demonstrate collective unity, discipline, and strong national pride.
(D) Focus on the development of elite professional athletes only for games.

150. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The purpose of Adapted Physical Education is to modify activities so that individuals with disabilities can participate successfully.
Reason (R) : The principle of inclusion suggests that separating students with disabilities from their peers is always the best educational practice.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

151. Which of the following is a prominent national body in India responsible for controlling a specific sport?
(A) Sports Authority of India (SAI)
(B) Indian Olympic Association (IOA)
(C) International Olympic Committee (IOC)
(D) All India Football Federation (AIFF)

152. "Sports leadership" is best defined as:
(A) Influencing and guiding a team toward goals while upholding sporting values.
(B) The specific individual who is consistently the strongest on the entire team.
(C) The certified official who is responsible for enforcing the rules of the game.
(D) The professional manager who handles the team's long-term financial budget.

153. Match the items in List I with those in List II and select the correct option.
List I : (Game)
P. Modern Olympic Games
Q. Asian Games
R. Commonwealth Games
S. Ancient Olympic Games
List II : (First Host City/Country)
1. New Delhi
2. Hamilton
3. Olympia
4. Athens
(A) P-4, Q-1, R-2, S-3
(B) P-3, Q-2, R-1, S-4
(C) P-4, Q-2, R-1, S-3
(D) P-1, Q-4, R-2, S-3

154. The physical education system in Germany, particularly under Jahn, was strongly associated with:
(A) A sense of nationalism and the goal of strengthening the German people for national liberation.
(B) A desire for international peace and cooperation.
(C) The principles of commercialism in sport.
(D) A focus on individual, non-competitive activities.

155. Which of the following statements about wellness is INCORRECT?
(A) Wellness is a dynamic, ever-changing process.
(B) Wellness involves an individual's self-responsibility for their health.
(C) Wellness encompasses multiple dimensions, including social, emotional, and intellectual health.
(D) Wellness is a one-dimensional concept focusing only on physical fitness.

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156. The modern trend of 'e-sports' as a form of recreation is an example of:
(A) Outdoor adventure recreation.
(B) Technology-based recreation.
(C) Therapeutic recreation.
(D) Traditional cultural recreation.

157. Which philosophy would most support a physical education teacher acting as a role model of ideal health and character?
(A) Pragmatism
(B) Existentialism
(C) Idealism
(D) Realism

158. Read the following statements regarding individuals associated with the history of physical education in India:
1. Harry Crowe Buck
2. The Vaidya Brothers (HVPM)
3. P.M. Joseph
4. G.D. Sondhi

Which of the above have made significant contributions to the pre- and early post-independence era of Indian physical education?
(A) 1 and 3 only
(B) 2 and 4 only
(C) 1, 2, and 3 only
(D) 1, 2, 3, and 4

159. The ancient Greek concept of 'Arete' which was pursued through physical and intellectual contests, can be best translated as:
(A) Excellence and virtue
(B) Wealth
(C) Leisure
(D) Military duty

160. One of the main objectives of teaching is to facilitate learning. This is best achieved when the teacher:
(A) Relies solely on one teaching method for all situations.
(B) Acts as a facilitator and guide rather than just a dispenser of information.
(C) Focuses only on the most gifted students.
(D) Avoids all forms of assessment and feedback.

161. A physical educator wants to design a recreational program for a community with a large population of elderly people. Which set of activities would be most appropriate and beneficial?
(A) High-intensity interval training, competitive football, and rock climbing events.
(B) Gentle yoga, walking club, board games, and social dance sessions.
(C) Professional e-sports tournament, skateboarding, and parkour challenges.
(D) Weightlifting competition, marathon running, and advanced gymnastics.

162. Read the following statements and select the correct option.
Statement I : The 'Muscular Christianity' movement in 19th century England viewed physical fitness and sport as a means to develop moral character.
Statement II : This movement was exclusively secular and rejected any connection between physical activity and religious or moral values.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

163. Which of these is a key function of the Sports Authority of India (SAI)?
(A) Selecting the host city for the Olympic Games.
(B) Setting the rules of international cricket.
(C) Implementing national sports policies and managing national sports facilities.
(D) Awarding the Major Dhyan Chand Khel Ratna.

164. Arrange the following developments in the history of the Modern Olympics in chronological order:
1. Introduction of the Winter Olympics.
2. Revival of the Olympic Games in Athens.
3. Inclusion of women in Olympic events.
4. First Youth Olympic Games held.

Which of the following is the correct sequence?
(A) 2, 3, 1, 4
(B) 1, 2, 3, 4
(C) 2, 1, 3, 4
(D) 3, 2, 1, 4

165. The term 'socializing agency' in the context of sports means that sport is an institution that:
(A) Helps people become more isolated and

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individualistic.
(B) Exists purely for commercial entertainment.
(C) Teaches individuals the norms and values of their society.
(D) Is controlled by social media influencers.

166. Which of the following is an example of an INDOOR recreational programme?
(A) Gardening
(B) Bowling
(C) Canoeing
(D) Cycling

167. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The philosophy of naturalism advocates for a physical education curriculum that is child-centered and follows the natural developmental patterns of the child.
Reason (R) : Naturalists believe that education should be based on the formal, rigid structures of society, not on the child's natural impulses.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

168. The primary characteristic of teaching aptitude is:
(A) The inherent potential of an individual to acquire the skills and competencies required for effective teaching.
(B) The physical strength of the teacher.
(C) The ability to memorize a large amount of information.
(D) The social status of the teacher.

169. What is the main objective of the 'Maulana Abul Kalam Azad (MAKA) Trophy' in India?
(A) To honour the best sportsperson of the year.
(B) To honour the best coach of the year.
(C) To recognize the top overall performing university in sports.
(D) To promote sports among corporate entities.

170. Read the following statements related to the objectives of Physical Education:
1. To develop organic vigor (physical development).
2. To develop neuromuscular coordination (motor development).
3. To develop desirable social attitudes and conduct (social development).
4. To develop emotional stability (emotional development).
5. To develop intellectual capacities through understanding rules and strategies (mental development).

Which of the above statements correctly represent the multifaceted objectives of physical education?
(A) 1, 2 and 3 only
(B) 2, 3, 4 and 5 only
(C) 1, 3 and 5 only
(D) 1, 2, 3, 4 and 5

171. The 'Thermae' in ancient Rome were:
(A) Military barracks for various infantry legionaries.
(B) Arenas specifically built for gladiatorial combat.
(C) The official residences of the Roman emperors.
(D) Large public centers for recreation and socializing.

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172. The difference between an 'aim' and an 'objective' in physical education is that:
(A) An aim is specific and measurable, while an objective is broad and general.
(B) An aim is the ultimate, long-term purpose, while objectives are the specific, short-term steps to achieve that aim.
(C) Aims and objectives are identical and can be used interchangeably.
(D) Aims relate to physical aspects only, while objectives relate to mental aspects.

173. The 'inclusion spectrum' is a tool used in adapted physical education to:
(A) Rank students based on the severity of their physical disability.
(B) Test the physical fitness of every student with a disability.
(C) Provide a framework for including students with disabilities.
(D) Select specific students for elite Paralympic team training.

174. Which of the following is NOT a benefit of wellness?
(A) Increased energy levels.
(B) Improved mood and mental health.
(C) Enhanced social relationships.
(D) A guaranteed longer lifespan.

175. Match the items in List I with those in List II and select the correct option.
List I : (International Sports Body)
P. FIFA
Q. FIBA
R. FINA
S. World Athletics
List II : (Sport)
1. Basketball
2. Aquatics (Swimming)
3. Athletics (Track and Field)
4. Football (Soccer)
(A) P-4, Q-1, R-2, S-3
(B) P-1, Q-4, R-3, S-2
(C) P-4, Q-2, R-1, S-3
(D) P-3, Q-1, R-2, S-4

176. "Sports as a socializing agency" means that sports can:
(A) Increase social isolation.
(B) Teach individuals societal roles and values.
(C) Only be played by people from high society.
(D) Be a source of social conflict and division.

177. The development of physical education in Australia has been heavily influenced by:
(A) The German Turnverein system exclusively throughout its school history.
(B) A culture that supports outdoor sports and an active lifestyle.
(C) A government policy that actively discourages competitive school sports.
(D) The ancient and traditional training regimens of the Roman Empire.

178. The widespread adoption of sedentary lifestyles (Cause) has led to what primary effect on public health?
(A) A rise in lifestyle-related chronic diseases like obesity and type-2 diabetes.
(B) An increase in overall physical fitness and stamina.
(C) A decrease in the need for recreational facilities.
(D) An improvement in mental well-being and stress levels.

179. Read the following statements and select the correct option.
Statement I : The first Asian Games were held in New Delhi in 1951.
Statement II : The idea of the Asian Games was proposed by G.D. Sondhi of India.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

180. The core principle of recreation is that the activity is:
(A) Compulsory and work-related.
(B) Always performed alone.
(C) Motivated by financial reward.
(D) Chosen voluntarily for the enjoyment and satisfaction it brings.

181. Who among the following is credited with inventing the game of basketball?
(A) William G. Morgan
(B) James Naismith
(C) Clark Hetherington
(D) Dudley Sargent

182. Read the following statements regarding the characteristics of teaching:
1. Teaching is an interactive process between teacher and learner.
2. It is a goal-oriented activity aimed at bringing desired changes in learners.
3. Teaching is both an art and a science.
4. Effective teaching is rigid and does not adapt to learner needs.
Which of the above statement(s) is/are correct?
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 2, and 3 only
(D) 1, 2, 3, and 4

183. The main purpose of the ancient Panathenaic Games held in Athens was to:
(A) Prepare men for war, similar to Sparta.
(B) Select athletes for the Olympic Games.
(C) Promote peace among all Greek city-states.
(D) Honour the goddess Athena, the patron of the city.

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184. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Wellness is an ongoing, active process.
Reason (R) : Maintaining wellness requires continuous effort and conscious choices regarding lifestyle, health, and well-being.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

185. A physical education teacher who believes in the philosophy of Realism would assess students based on:
(A) Their effort and attitude, regardless of the outcome.
(B) Their popularity with their classmates.
(C) Objective, measurable data, such as fitness scores, skill execution accuracy, and performance statistics.
(D) A subjective evaluation of their moral character.

186. The concept of "social aspects of competition" refers to how:
(A) Competition is influenced by societal structures, values, and interactions.
(B) Competition is purely an individual internal psychological experience.
(C) Only wealthy people can afford to compete in various elite sports.
(D) Competition in sports is detached from the rest of general society.

187. The term "gymnastics" is derived from the Greek word "gymnos," which means:
(A) Strength
(B) Harmony
(C) Competition
(D) Naked or unclothed

188. Which Indian sports award is specifically given to recognize and encourage sports promotion by corporate entities and individuals?
(A) Arjuna Award
(B) Rashtriya Khel Protsahan Puruskar
(C) Dronacharya Award
(D) Major Dhyan Chand Khel Ratna Award

189. A program of swimming and aquatic exercises designed to help individuals recover from joint injuries is an example of:
(A) Competitive recreation
(B) Passive recreation
(C) Therapeutic recreation
(D) Commercial recreation

190. Read the following statements and select the correct option.
Statement I : The Tara Chand Committee report (1948) was a significant document for the development of secondary education in India, including physical education.
Statement II : The report recommended making physical education an optional, extracurricular activity.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

191. The Lingiad festivals, held in Sweden, were created to:
(A) Showcase and promote the Swedish system of gymnastics developed by Per Henrik Ling.
(B) Compete with the Olympic Games.
(C) Promote traditional Swedish folk dancing.
(D) Serve as a military recruitment event.

192. Which of the following is the best example of a competency-based task for a student leader in a physical education class?
(A) Memorizing the names of all team members.
(B) Successfully organizing and leading a 10-minute warm-up session for the class.
(C) Being the fastest runner in the group.
(D) Reporting any student who misbehaves.

193. Read the following statements regarding the history of Physical Education in India:
1. The YMCA, under H.C. Buck, played a pivotal role in popularizing and standardizing physical education.
2. The Hanuman Vyayam Prasarak Mandal (HVPM) focused on blending Indian traditions with modern physical education.
3. The Lakshmibai National University

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of Physical Education (LNUPE) was established post-independence to create leaders in physical education.
4. Pre-independence physical education was solely focused on British sports like cricket.
5. The Kunzru committee was formed to promote indigenous games only.

Which of the above statement(s) is/are correct?
(A) 1, 2 and 3 only
(B) 2, 3 and 4 only
(C) 1, 4 and 5 only
(D) 1, 2, 3, 4 and 5

194. The objective of 'character development' in physical education is most closely aligned with which philosophy?
(A) Idealism
(B) Realism
(C) Pragmatism
(D) Naturalism

195. The primary reason for the decline of the Ancient Olympic Games, leading to their abolishment in 393 AD by Emperor Theodosius I, was:
(A) Lack of interest from athletes.
(B) Economic recession in Greece.
(C) The rise of Christianity and the perception of the games as a "pagan" festival.
(D) The destruction of the stadium at Olympia by an earthquake.

196. The most appropriate teaching method for introducing a complex tactical play in basketball to an advanced team would be:
(A) Command Style
(B) Free Exploration
(C) Lecture only
(D) Problem-Solving or Guided Discovery

197. Match the items in List I with those in List II and select the correct option.
List I : (Philosophy)
P. Pragmatism
Q. Idealism
R. Realism
S. Naturalism
List II : (Core Principle in physical education)
1. Curriculum based on scientific principles and objective reality
2. Learning through experience and problem-solving
3. Education according to nature, child-centered
4. Teacher as a role model, emphasis on character

(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-1, S-3
(C) P-2, Q-1, R-4, S-3
(D) P-3, Q-4, R-1, S-2

198. The social aspect of leadership in sport is demonstrated when a team captain:
(A) Focuses only on their individual performance.
(B) Mediates a conflict between two teammates, fostering team cohesion.
(C) Criticizes teammates openly to motivate them.
(D) Ignores the coach's instructions.

199. One of the major contributions of GutsMuths to physical education was:
(A) The invention of the parallel bars.
(B) The establishment of the first YMCA.
(C) The revival of the Olympic Games.
(D) His book 'Gymnastics for the Young', which provided a systematic framework for school gymnastics.

200. The motto "Citius, Altius, Fortius" was officially adopted for the Olympic Games. What does it mean?
(A) Faster, Higher, Stronger
(B) Fairer, Kinder, Wiser
(C) Health, Mind, Body
(D) Nation, Honour, Glory

201. Which of the following is NOT a characteristic of a person with high levels of wellness?
(A) Possesses a positive outlook on life.
(B) Actively engages in health-promoting behaviors.
(C) Relies solely on medication to manage health.
(D) Effectively manages stress.

202. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : The 'Akhara' tradition in India represents a form of indigenous physical culture.
Reason (R) : Akharas have historically been

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centers for training in traditional wrestling and other martial arts, often with a spiritual and disciplined lifestyle.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

203. A recreational program for young children should primarily emphasize:
(A) High-level competition and specialization.
(B) Strict discipline and rigorous training schedules.
(C) The use of complex rules and strategies.
(D) Fun, participation, and the development of fundamental motor skills.

204. What is the name of the highest national award for lifetime achievement in sports and games in India, named after a hockey legend?
(A) Dronacharya Award
(B) Major Dhyan Chand Award
(C) Arjuna Award
(D) Maulana Abul Kalam Azad Trophy

205. The primary aim of physical education can be best stated as:
(A) The production of elite athletes.
(B) The prevention of all diseases.
(C) The wholesome development of an individual.
(D) The winning of medals in international competitions.

206. Read the following statements and select the correct option.
Statement I : Existentialism in physical education emphasizes individual responsibility and freedom of choice.
Statement II : An existentialist teacher would impose a rigid, uniform curriculum on all students.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

207. Which of the following is NOT a typical component of an indoor recreational program?
(A) Mountaineering
(B) Table Tennis
(C) Chess
(D) Carrom

208. The main function of a national sports federation in India, like the AFI (Athletics Federation of India), is to:
(A) Govern all sports in India.
(B) Govern and promote athletics at all levels within India.
(C) Select the Indian cricket team.
(D) Manage all national stadiums.

209. Arrange the following events from the history of physical education in chronological order:
1. Founding of the Philanthropinum by Basedow.
2. Establishment of YMCA College of Physical Education, Madras.
3. Publication of 'Gymnastics for the Young' by GutsMuths.
4. Start of the Turnverein movement by Jahn.

Which of the following is the correct sequence?
(A) 1, 3, 4, 2
(B) 3, 1, 4, 2
(C) 1, 4, 3, 2
(D) 4, 1, 3, 2

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210. The social benefit of participating in team sports is the development of:
(A) Cooperation, communication, and a sense of belonging.
(B) Individualistic and selfish behavior.
(C) An inability to follow rules.
(D) A dislike for physical activity.

211. Which dimension of wellness relates to the ability to interact effectively with others and the community?
(A) Physical Wellness
(B) Emotional Wellness
(C) Social Wellness
(D) Intellectual Wellness

212. In the context of teaching aptitude, "teaching method" refers to:
(A) The specific personality of the teacher.
(B) The exact content of the current syllabus.
(C) The physical infrastructure of the school.
(D) The management strategies for instruction.

213. Read the following statements regarding the Commonwealth Games:
1. They are held every four years.
2. Participation is open to all countries of the world.
3. They are also known as the "Friendly Games".
4. The first games were held in London, England.
5. The event is for member states of the Commonwealth of Nations.

Which of the above statement(s) is/are correct?
(A) 1, 2, and 3
(B) 2, 3, and 4
(C) 1, 3, and 5
(D) 1, 4, and 5

214. The concept of physical education in Ancient Rome declined into 'bread and circuses' which refers to:
(A) A focus on health, nutrition, and scientific training.
(B) Providing food and spectacles to pacify the masses.
(C) A system balancing intellectual and physical pursuits.
(D) The religious festivals honoring the Roman gods.

215. The most significant characteristic of recreation is that it is:
(A) Compulsory
(B) Work-related
(C) Financially motivated
(D) Voluntarily chosen

216. Read the following statements and select the correct option.
Statement I : The Sports Authority of India (SAI) is the apex national sports body of India for the development of sport.
Statement II : The Indian Olympic Association (IOA) is responsible for selecting athletes to represent India at the Olympic Games.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

217. A physical education teacher who designs activities based on scientific principles of physiology and biomechanics is most aligned with which philosophy?
(A) Idealism
(B) Existentialism
(C) Realism
(D) Naturalism

218. The modern revival of the Olympic games in 1896 was a result of the efforts of a French educator named:
(A) Pierre de Coubertin
(B) Friedrich Ludwig Jahn
(C) Per Henrik Ling
(D) Franz Nachtegall

219. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Team sports provide a fertile ground for developing social skills.
Reason (R) : Success in team sports often requires communication, cooperation, and mutual respect among players, which are valuable social skills.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

220. Which award is given to coaches for their contribution to sports in India?
(A) Arjuna Award
(B) Dronacharya Award
(C) Major Dhyan Chand Khel Ratna Award
(D) Ati Vishisht Seva Medal

221. An example of a modern trend in recreation is:
(A) The declining interest in any form of physical activity.
(B) The complete disappearance of traditional board games.
(C) The growth of virtual reality (VR) based fitness games.
(D) The mandatory participation in community sports.

222. The main goal of adapted physical education is to:
(A) Segregate students with disabilities from

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their peers.
(B) Train all students with disabilities to become Paralympic athletes.
(C) Provide an excuse for students to avoid physical education.
(D) Ensure students with disabilities participate meaningfully.

223. Match the items in List I with those in List II and select the correct option.
List I : (Historical Figure)
P. Pierre de Coubertin
Q. H.C. Buck
R. F.L. Jahn
S. Per Henrik Ling
List II : (Contribution to physical education)
1. Father of Swedish Gymnastics
2. Father of German Gymnastics (Turnverein)
3. Founder of YMCA College of PE in India
4. Father of Modern Olympics
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-3, S-1
(D) P-3, Q-4, R-1, S-2

224. The term "learner characteristics" in teaching includes all of the following EXCEPT:
(A) The learner's prior knowledge and experience.
(B) The teacher's salary and benefits.
(C) The learner's motivation and attitude.
(D) The learner's cognitive and physical abilities.

225. "Sports as cultural heritage" is important because it:
(A) Generates maximum revenue from all sporting activities.
(B) Helps to connect present generations with their history and traditions.
(C) Ensures that only modern, popular sports are played.
(D) Promotes a single global sports culture, erasing local variations.

226. What does the Olympic flame symbolize?
(A) The ideals of purity, the endeavor for perfection, and the link between ancient and modern games.
(B) The fire that destroyed the ancient temple of Zeus.
(C) The victory of one nation over others.
(D) The commercial sponsors of the games.

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227. The development of physical education in Russia, especially during the Soviet era, was characterized by a system called:
(A) "Sokol"
(B) "Turnverein"
(C) "Ready for Labour and Defence" (GTO)
(D) "Muscular Christianity"

228. Which of the following is a primary characteristic of a recreational activity?
(A) It is forced upon the individual.
(B) It is always a high-risk activity.
(C) It is part of one's professional work.
(D) It is done for personal enjoyment and satisfaction.

229. Read the following statements regarding the history of physical education in Germany:
1. GutsMuths is considered the "grandfather" of German gymnastics.
2. Friedrich Jahn, the "father" of German gymnastics, used it to promote nationalism.
3. The Turnplatz was an outdoor area for gymnastic exercises.
4. The German system completely ignored sports and games in favour of apparatus work.

Which of the above statement(s) is/are correct?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) 1, 2, 3, and 4

230. A person's ability to cope with stress, manage emotions, and maintain a positive self-concept relates to which dimension of wellness?
(A) Physical
(B) Emotional
(C) Social
(D) Spiritual

231. The Indian Olympic Association (IOA) is affiliated with the:
(A) Sports Authority of India (SAI)
(B) Ministry of Youth Affairs and Sports
(C) Board of Control for Cricket in India (BCCI)
(D) International Olympic Committee (IOC)

232. Read the following statements and select the correct option.
Statement I : Leadership is an innate quality that cannot be developed through experience.
Statement II : Sports provide numerous opportunities for individuals to practice and develop leadership skills.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is false, but Statement II is true.
(D) Statement I is true, but Statement II is false.

233. The philosophy of Pragmatism is best reflected in which teaching method?
(A) The teacher setting up a problem (e.g., "How can we get the ball over the net?") and having students experiment to find a solution.
(B) The teacher lecturing on the ideal way to perform a skill.
(C) The teacher having students read about the scientific basis of exercise.
(D) The teacher leading students in a quiet meditation on the beauty of movement.

234. The Asian Games are regulated by which continental association?
(A) Olympic Council of Asia (OCA)
(B) International Olympic Committee (IOC)
(C) Commonwealth Games Federation (CGF)
(D) Association of National Olympic Committees (ANOC)

235. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Recreation provides an outlet for pent-up emotions and serves as a means of relaxation.
Reason (R) : This cathartic function of recreation contributes to improved mental health and overall well-being.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

236. The objective of physical education which focuses on the proper functioning of bodily systems like the circulatory and respiratory systems is:
(A) Social development
(B) Organic development
(C) Neuro-muscular development
(D) Emotional development

237. The 'Pentathlon' in the Ancient Olympic Games consisted of five events: discus, javelin, long jump, running, and _____.
(A) Boxing
(B) Chariot Racing
(C) Wrestling
(D) Swimming

238. In a physical education class, a teacher who provides students with choices in activities and encourages them to find personal relevance and meaning is applying the principles of:
(A) Idealism
(B) Realism
(C) Authoritarianism
(D) Existentialism

239. The most prominent national honour for outstanding achievement in sports and games in India is the:
(A) Major Dhyan Chand Khel Ratna Award
(B) Arjuna Award
(C) Dronacharya Award
(D) Padma Shri

240. The 'problem-solving' teaching method in physical education primarily aims to develop a learner's:
(A) Rote memory of rules.
(B) Cognitive abilities and decision-making skills.
(C) Physical strength only.
(D) Ability to follow commands without question.

241. Which of the following is an example of a recreational program designed for various categories of people?
(A) A single, high-intensity program for all ages and abilities.
(B) A corporate wellness retreat, a summer camp for children, and a senior citizens' walking group.
(C) A professional sports team's training camp.

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(D) A mandatory military fitness test.

242. The historical development of physical education in China in recent decades is best characterized by:
(A) A state-driven pursuit of international prestige.
(B) A focus on traditional martial arts and a rejection of Western sports systems.
(C) A complete lack of government support for sports and physical training.
(D) An emphasis on non-competitive activities for leisure and community purposes.

243. Read the following statements regarding the objectives of teaching:
1. To bring desirable changes in learners' behavior.
2. To shape conduct and build character.
3. To impart knowledge and develop skills.
4. To discourage critical thinking.

Which of the above statement(s) is/are correct?
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 2, and 3 only
(D) 1, 2, 3, and 4

244. The social value of 'sportsmanship' includes all of the following EXCEPT:
(A) Playing fair and by the rules.
(B) Respecting opponents and officials.
(C) Showing grace in both victory and defeat.
(D) Winning at any cost, including cheating.

245. In which country did Per Henrik Ling establish his Royal Central Institute of Gymnastics, promoting a system based on pedagogical, medical, military, and aesthetic principles?
(A) Germany
(B) Denmark
(C) Sweden
(D) England

246. Read the following statements and select the correct option.
Statement I : Wellness is a static state, achieved by visiting a doctor once a year.
Statement II : Wellness is a dynamic, multidimensional process that involves conscious choices and self-responsibility.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is false, but Statement II is true.
(D) Statement I is true, but Statement II is false.

247. The 19th-century "Muscular Christianity" movement in England is an example of the link between sport and:
(A) Commercialization
(B) Political revolution
(C) Scientific research
(D) Social values

248. The primary role of the International Federation (e.g., FIFA, FIBA) for a sport is to:
(A) Establish and enforce the international rules and standards for that specific sport.
(B) Organize the Olympic Games.
(C) Provide direct funding to all athletes worldwide.
(D) Act as the national governing body in every country.

249. Which of the following is a key characteristic of the teaching aptitude of a physical education teacher?
(A) Deep knowledge of historical dates.
(B) Ability to write academic papers.
(C) Ability to demonstrate skills correctly.
(D) A license to practice medicine.

250. The ultimate aim of physical education, encompassing all its objectives, is the:
(A) Wholesome development of the individual's personality.
(B) Development of a perfect physique.
(C) Attainment of professional status in sports.
(D) Mastery of the rules of all games.

Direction : Please read the following source carefully.

The application of educational philosophies to physical education provides a foundational framework for determining its objectives, curriculum, and pedagogical approaches. Idealism, which posits that reality is fundamentally mental or spiritual, views the physical educator as a role model who helps students strive for perfection in both character and performance. It emphasizes the development of self, personality, and moral values through physical activities. Conversely, Realism asserts

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that reality exists independently of the human mind and focuses on the objective world of matter and energy. A realist approach to physical education is grounded in scientific principles, emphasizing the laws of physics and biology. It prioritizes measurable outcomes, biomechanical efficiency, and the development of physical fitness through structured, evidence-based programs. Pragmatism, also known as experimentalism, contends that truth is relative and is discovered through experience. For a pragmatist, physical education should be student-centered, focusing on problem-solving, social interaction, and activities that are meaningful to the learner's life. Finally, Naturalism advocates for an education that is in harmony with the natural processes of human development. It prioritizes play, natural movements, and learning in outdoor environments, respecting the child's individual readiness and innate tendencies over a rigidly prescribed curriculum.

Based on the above source, attempt the following five questions.

251. Which philosophy of education, when applied to physical education, would most strongly advocate for a curriculum based on student-led game modifications and activities relevant to daily life?
(A) Idealism, as it focuses on the perfection of the self.
(B) Pragmatism, as it values experience and problem-solving.
(C) Realism, as it is grounded in objective scientific laws.
(D) Naturalism, as it prioritizes the natural environment.

252. According to the source, a physical education teacher who prioritizes biomechanical analysis and tracks quantifiable improvements in student fitness is most aligned with which philosophy?
(A) Realism
(B) Idealism
(C) Pragmatism
(D) Naturalism

253. What is the primary distinction between the Idealist and Realist approaches to physical education as described in the paragraph?
(A) Idealism focuses on outdoor activities while Realism focuses on indoor gymnasiums.
(B) Idealism is student-centered while Realism is teacher-centered.
(C) Idealism emphasizes moral and character development while Realism emphasizes scientific principles and measurable results.
(D) Idealism values play and exploration while Realism values structured drills and competition.

254. Based on the description of Naturalism, which of the following activities would be most representative of a naturalist physical education program?
(A) A highly structured gymnastics routine focusing on perfect form.
(B) A competitive basketball tournament with a focus on winning.
(C) A lecture on the anatomical principles of human movement.
(D) An unstructured session of free play and exploration in a park.

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255. The source suggests that a teacher acting as a 'role model' to help students achieve 'perfection' is a central tenet of which philosophy's application to physical education?
(A) Pragmatism
(B) Naturalism
(C) Idealism
(D) Realism

Direction : Please read the following source carefully.

The historical development of physical education in ancient Greece and Rome reveals contrasting cultural values and objectives. In Greece, physical education was integral to the holistic development of the individual, encapsulated in the pursuit of 'arete' (excellence). This manifested differently across city-states. Athens, for example, championed the ideal of a 'man of action and a man of wisdom,' striving for a harmonious balance between the physical and intellectual. The Athenian gymnasium was a hub for both athletic training and philosophical discourse, fostering well-rounded citizens. In stark contrast, Spartan physical education was exclusively utilitarian and militaristic. Its sole purpose was to forge physically dominant and unconditionally obedient soldiers for the state, subjecting both boys

and girls to a rigorous and brutal training regimen from an early age. The Romans, while influenced by the Greeks, adapted physical training for their own pragmatic ambitions. For them, physical education was not about aesthetic harmony or holistic development but served the purposes of military superiority and public entertainment. The focus shifted to developing strength and combat skills for the legions and conditioning performers for gladiatorial contests and large-scale spectacles. This represents a significant divergence from the Athenian ideal, prioritizing training for conquest and mass amusement over education for enlightened citizenship.

Based on the above source, attempt the following five questions.

256. According to the source, what was the primary purpose of physical education in Sparta?
(A) To achieve a harmonious balance of mind and body.
(B) To produce physically superior and disciplined soldiers.
(C) To provide entertainment for the general populace.
(D) To prepare citizens for intellectual discourse.

257. How did the Roman approach to physical training differ from the Athenian ideal?
(A) Romans focused on holistic development, whereas Athenians focused only on military skills.
(B) Romans excluded physical training from their culture, while Athenians made it central.
(C) Romans emphasized philosophical discourse in their gymnasia, while Athenians prioritized combat.
(D) Romans valued physical education for military and entertainment purposes, unlike the Athenian focus on well-rounded citizenship.

258. The paragraph suggests that the Athenian gymnasium served a dual function. What were these two functions?
(A) Athletic training and philosophical discussion.
(B) Military training and public entertainment.
(C) Medical rehabilitation and religious worship.
(D) Childcare and primary education.

259. What can be inferred about the concept of 'arete' as it relates to Athenian physical education?
(A) It was a purely physical concept related to athletic victory.
(B) It was exclusively a military ideal focused on combat prowess.
(C) It represented a standard of excellence encompassing both physical and intellectual qualities.
(D) It was a Roman adaptation of a Spartan training principle.

260. The source describes the Roman use of physical training for gladiatorial contests and spectacles as a form of:
(A) Public entertainment.
(B) Holistic development.
(C) Well-rounded citizenship.
(D) Philosophical expression.

Direction : Please read the following source carefully.

The nineteenth century witnessed the establishment of formal, national systems of physical education across Europe, each reflecting unique philosophical and political motivations. In Germany, figures like Friedrich Ludwig Jahn and GutsMuths were instrumental in creating 'Turnen,' a form of gymnastics. This system was heavily imbued with nationalistic sentiment, designed to cultivate strong, patriotic citizens capable of defending the nation. It heavily utilized fixed apparatus and mass exercises. Concurrently, Sweden developed a more scientific and systematic approach under Per Henrik Ling. Ling's Swedish gymnastics was categorized into four distinct branches: pedagogical (for schools), medical (for therapy), military (for soldiers), and aesthetic (for expression). This system was characterized by its emphasis on anatomical principles, precise execution of movements, and its goal of achieving corrective and developmental effects on the body, rather than purely nationalistic fervor. In Denmark, Franz Nachtegall, influenced by the German model of GutsMuths, played a pivotal role in popularizing physical education. He established the country's first private gymnasium and was later appointed as the director of gymnastics for all of Denmark, successfully making physical

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training a mandatory component of both school and military life. Nachtegall's contribution was crucial in systematizing and ensuring mass participation in physical education nationwide.
Based on the above source, attempt the following five questions.

261. According to the text, which European system of physical education was explicitly divided into pedagogical, medical, military, and aesthetic branches?
(A) The German 'Turnen' system.
(B) The Danish system under Nachtegall.
(C) The English system of public schools.
(D) The Swedish system of Per Henrik Ling.

262. What was a primary motivation behind the development of 'Turnen' in Germany?
(A) A focus on therapeutic and corrective exercises.
(B) A strong sense of nationalism and citizen-building.
(C) The promotion of aesthetic and expressive movement.
(D) The adoption of scientific and anatomical principles.

263. The source credits Franz Nachtegall with what significant achievement in Denmark?
(A) Inventing a new system of gymnastics based on aesthetic principles.
(B) Dividing gymnastics into four distinct scientific branches.
(C) Making physical training compulsory in schools and the military.
(D) Focusing exclusively on the use of heavy apparatus like Jahn.

264. A key distinction highlighted between the German and Swedish systems is that:
(A) The German system was for military use only, while the Swedish system was for schools.
(B) The German system used no apparatus, while the Swedish system required extensive equipment.
(C) The German system was developed by Ling, while the Swedish system was developed by Jahn.
(D) The German system was nationalistic, while the Swedish system was more scientific and therapeutic.

265. Who is identified in the passage as an early influence on Denmark's Franz Nachtegall?
(A) GutsMuths
(B) Per Henrik Ling
(C) Friedrich Ludwig Jahn
(D) An unnamed Roman philosopher

Direction : Please read the following source carefully.

The growth and development of physical education in India can be traced through pre- and post-independence periods, reflecting the nation's changing social and political landscape. Before independence, indigenous activities like yoga, mallakhamb, and various martial arts formed the traditional basis of physical culture, often intertwined with spiritual and self-disciplinary practices. The British colonial era introduced modern sports and a more structured, drill-based system of physical training in schools, primarily aimed at instilling discipline and loyalty, drawing parallels with the European models of the time. Following independence in 1947, a concerted effort was made to systematize and promote physical education as a vital component of national development. Key milestones include the establishment of the National Discipline Scheme (NDS), the Lakshmibai National College of Physical Education (LNCPE) in 1957 as a premier institution for training teachers, and the recommendations of various education commissions that emphasized the importance of physical fitness and sports for all students. Post-independence policies sought to create a synthesis between traditional Indian physical culture and modern sports science, aiming to foster health, character, and sporting excellence on a national scale. The establishment of bodies like the Sports Authority of India (SAI) further professionalized the training of athletes and the management of sports infrastructure across the country.
Based on the above source, attempt the following five questions.

266. What does the source identify as the traditional basis of physical culture in pre-independence India?
(A) Drill-based systems introduced by the British.

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(B) Indigenous activities such as yoga and mallakhamb.
(C) Competitive sports like cricket and football.
(D) The establishment of national sports authorities.

267. According to the passage, what was a primary objective of the physical training systems introduced during the British colonial era?
(A) To promote traditional Indian martial arts.
(B) To instill discipline and loyalty among students.
(C) To prepare athletes for international competition.
(D) To integrate yoga into the school curriculum.

268. The establishment of the Lakshmibai National College of Physical Education (LNCPE) in 1957 is presented as a key milestone for what purpose?
(A) To serve as a premier institution for training physical education teachers.
(B) To manage sports infrastructure across India.
(C) To promote indigenous games at the international level.
(D) To implement the National Discipline Scheme (NDS).

269. The post-independence approach to physical education in India is best described as:
(A) A complete rejection of British-introduced sports.
(B) An exclusive focus on traditional Indian activities.
(C) A synthesis of traditional culture and modern sports science.
(D) A system solely dedicated to producing elite athletes.

270. What can be inferred about the role of the Sports Authority of India (SAI) from the passage?
(A) It was primarily an advisory body with no executive power.
(B) It was established during the British colonial era.
(C) It focuses only on promoting traditional games like mallakhamb.
(D) It plays a key role in professionalizing athlete training and sports management.

Direction : Please read the following source carefully.

Recreation encompasses activities undertaken during leisure time, voluntarily chosen for the personal satisfaction and enrichment they bring. A core principle of recreation is its voluntary nature; it cannot be compulsory and must be pursued out of intrinsic motivation. Its primary characteristic is the provision of enjoyment, relaxation, and a constructive outlet for energies, which contrasts with activities performed out of obligation or for monetary gain. The importance of recreation lies in its contribution to holistic well-being, promoting mental, emotional, physical, and social health. It serves as a vital counterbalance to the stresses of modern life. Modern trends in recreation reflect societal changes, with a growing interest in adventure sports, eco-tourism, digital and virtual reality-based leisure, and wellness-focused activities. Recreational programmes are diverse and can be broadly categorized as indoor or outdoor. Indoor programmes might include board games, arts and crafts, or indoor sports, while outdoor programmes feature hiking, camping, and team sports. It is crucial to design recreational programmes for various categories of people, considering age, ability, interests, and socio-economic background, to ensure inclusivity and maximum benefit. For instance, programmes for senior citizens might focus on gentle exercise and social interaction, while those for youth might emphasize adventure and skill development.

Based on the above source, attempt the following five questions.

271. What is described as a core principle of recreation in the provided text?
(A) It must be a competitive activity.
(B) It must be performed for monetary gain.
(C) It must be of a voluntary nature.
(D) It must be a physically demanding programme.

272. According to the source, the importance of recreation is primarily linked to its ability to:
(A) generate income for participants.
(B) contribute to holistic well-being.
(C) develop professional career skills.
(D) fulfill work-related obligations.

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273. The text mentions adventure sports and digital leisure as examples of what?
(A) Recreational programmes for senior citizens.
(B) Activities performed out of obligation.
(C) The primary characteristics of indoor recreation.
(D) Modern trends in recreation.

274. Based on the paragraph, why is it important to design recreational programmes for various categories of people?
(A) To ensure inclusivity by considering diverse needs and interests.
(B) To ensure that all programmes are competitive.
(C) To focus exclusively on outdoor activities.
(D) To guarantee monetary gain for all participants.

275. Which of the following best contrasts with the concept of recreation as defined in the source?
(A) Playing a board game with friends for fun.
(B) Going for a hike on a weekend.
(C) Working overtime at a job to meet a deadline.
(D) Engaging in a painting hobby for relaxation.

Direction : Please read the following source carefully.

Wellness is a dynamic and multidimensional concept that extends beyond the mere absence of disease. It represents a conscious, self-directed, and evolving process of achieving one's full potential. The importance of wellness lies in its holistic approach, integrating physical, mental, emotional, social, spiritual, and environmental dimensions of health. The benefits are profound, including increased energy, improved stress management, enhanced mental clarity, and a higher overall quality of life. However, the development and maintenance of wellness present significant challenges. These can include a lack of knowledge, insufficient motivation, time constraints, financial barriers, and unsupportive social or physical environments. Effectively maintaining wellness requires a proactive and consistent commitment to positive lifestyle choices, such as a balanced diet, regular physical activity, adequate rest, and effective stress-coping mechanisms. It also involves cultivating a positive mindset and building strong social support networks. For many, the journey to wellness is not linear; it involves overcoming setbacks and continuously adapting strategies to fit changing life circumstances. Therefore, developing wellness is less about reaching a final destination and more about engaging in a lifelong process of growth and balance across all dimensions of one's being.

Based on the above source, attempt the following five questions.

276. How does the source define the concept of wellness?
(A) A conscious and evolving process of achieving full potential.
(B) The complete absence of any physical illness.
(C) A static state of perfect physical fitness.
(D) The ability to perform strenuous physical tasks without fatigue.

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277. Which of the following is NOT listed in the text as a dimension of the holistic approach to wellness?
(A) Physical
(B) Emotional
(C) Environmental
(D) Financial

278. According to the paragraph, which of these is considered a challenge to the maintenance of wellness?
(A) High levels of personal motivation.
(B) Time constraints and lack of knowledge.
(C) Supportive social environments.
(D) Proactive lifestyle choices.

279. What can be inferred from the statement that the journey to wellness "is not linear"?
(A) Progress in wellness is always steady and predictable.
(B) Achieving wellness is a one-time event.
(C) Individuals may experience setbacks and must adapt their strategies.
(D) Once wellness is achieved, no further effort is required.

280. The text suggests that maintaining wellness is primarily about:
(A) focusing solely on diet and physical exercise.
(B) reaching a final, perfect state of health.
(C) avoiding all forms of environmental stress.

(D) engaging in a lifelong process of growth and balance.

Direction : Please read the following source carefully.

Teaching aptitude in the context of physical education refers to an individual's innate potential or acquired competence to be an effective instructor in this specialized field. The primary objective of teaching is to facilitate learning and bring about desired changes in learners, which in physical education, encompasses motor skills, cognitive understanding, and affective development. Key characteristics of effective teaching include subject matter mastery, strong communication skills, enthusiasm, and the ability to manage a class effectively. However, effectiveness is also contingent upon understanding learner characteristics, which can vary significantly. These include the learner's developmental stage (physical, cognitive, and social), prior experiences, learning styles, and motivation levels. For example, a young child's need for play-based learning differs vastly from an adolescent's desire for competitive and social engagement. Various teaching methods are employed to cater to these differences. Direct instruction might be effective for teaching a specific, complex skill, while inquiry-based or cooperative learning methods may be better for fostering tactical understanding and teamwork. An adept physical education teacher must be proficient in selecting and adapting teaching methods to suit the specific learning objectives, the content being taught, and the unique characteristics of their learners to create a positive and productive learning environment.

Based on the above source, attempt the following five questions.

281. According to the text, what are the three domains of learning that physical education aims to influence?
(A) Motor, cognitive, and affective.
(B) Reading, writing, and arithmetic.
(C) Physical, social, and spiritual.
(D) Individual, team, and competitive.

282. The passage suggests that an effective teacher must adapt their teaching methods based on three main factors. What are they?
(A) School budget, class size, and available time.
(B) Learning objectives, content, and learner characteristics.
(C) Teacher's preference, school policy, and parental demands.
(D) Subject mastery, communication skills, and enthusiasm.

283. Why is understanding learner characteristics considered crucial for effective teaching in physical education?
(A) Because all learners have the same motivation and learning style.
(B) Because learners' needs differ based on factors like age and experience.
(C) Because it allows the teacher to use only one teaching method.
(D) Because it is the only way to ensure subject matter mastery.

284. Which teaching method would be most appropriate, according to the source, for developing teamwork and tactical understanding?
(A) Inquiry-based or cooperative learning
(B) Direct instruction
(C) Rote memorization
(D) Repetitive skill drills

285. The term 'teaching aptitude' as described in the paragraph refers to the:
(A) learner's ability to acquire new motor skills.
(B) school's capacity to provide resources.
(C) teacher's potential or competence to instruct effectively.
(D) curriculum's focus on competitive sports.

Direction : Please read the following source carefully.

Sports play a significant role as a social aspect of modern society, acting as a powerful socializing agency. Through participation in sports, individuals, particularly children and adolescents, learn to interact with others, cooperate towards a common goal, and navigate complex social dynamics. This process helps in the internalization of societal norms and values. Central to this are the social values that sports are believed to foster, such as fairness, discipline, respect for rules and authority, and perseverance. The structured environment of sports provides a microcosm of society where

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actions have consequences, and success often depends on collective effort. Furthermore, the concept of sports leadership is crucial; team captains, coaches, and even informal leaders within a group learn and demonstrate skills like communication, motivation, and responsibility, which are transferable to other areas of life. Sports also function as a form of cultural heritage, preserving and transmitting traditional games and physical activities from one generation to the next, thereby strengthening community identity. While competition is an inherent part of sports, its social aspect is complex. Healthy competition can drive personal improvement and build character, but an overemphasis on winning can sometimes undermine positive social values, leading to unsportsmanlike conduct and conflict.

Based on the above source, attempt the following five questions.

286. According to the passage, how does sport function as a socializing agency?
(A) By encouraging individual achievement over group success.
(B) By isolating participants from societal norms and rules.
(C) By promoting conflict and unsportsmanlike conduct.
(D) By teaching individuals to cooperate and interact within a structured environment.

287. Which of the following is listed in the text as a social value fostered by sports?
(A) Disregard for rules
(B) Individualism
(C) Perseverance
(D) Financial gain

288. The source suggests that sports leadership skills are valuable because they are:
(A) useful only within the context of a specific sport.
(B) transferable to other domains of life.
(C) a way to ensure victory at all costs.
(D) demonstrated only by professional coaches.

289. What dual role does competition play in the social aspect of sports, as described in the paragraph?
(A) It always builds character and simultaneously guarantees financial success.
(B) It serves as both a socializing agency and a form of cultural heritage.
(C) It is both a method of leadership development and a way to preserve traditional games.
(D) It can foster personal improvement but can also undermine positive values if overemphasized.

290. The passage indicates that sports contribute to cultural heritage by:
(A) preserving and passing on traditional games through generations.
(B) replacing traditional games with modern ones.
(C) creating new social values that conflict with tradition.
(D) commercializing all physical activities.

Direction : Please read the following source carefully.

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The Olympic Games, in their Ancient and Modern iterations, represent a cornerstone of sporting history, though they differ significantly in philosophy, scope, and practice. The Ancient Olympic Games, held at Olympia in Greece from 776 B.C., were fundamentally a religious festival dedicated to the god Zeus. Participation was restricted to freeborn Greek men, and the events, such as running, wrestling, and chariot racing, were seen as offerings to the gods. The ultimate prize was a simple olive wreath, symbolizing glory and divine favor rather than material wealth. In contrast, the Modern Olympic Games, revived by Pierre de Coubertin in 1896, are a secular, international celebration of sport. They bring together athletes from nearly every nation in the world, including women, who were barred from the ancient contests. While the modern games espouse ideals of friendship, solidarity, and fair play, they are also characterized by immense commercialization, media coverage, and national prestige. The range of sports is vastly expanded, and winning brings not only medals but also significant financial and social rewards. The Commonwealth and Asian Games are major multi-sport events structured similarly to the Modern Olympics but with a regional focus, fostering competition and goodwill among member nations of the Commonwealth and the continent of Asia, respectively.

Based on the above source, attempt the following

five questions.

291. What was the fundamental nature of the Ancient Olympic Games according to the text?
(A) A commercial enterprise for athletes.
(B) A secular international sports competition.
(C) A religious festival honoring the god Zeus.
(D) A political summit for Greek city-states.

292. A significant difference between the Ancient and Modern Olympics mentioned in the source is:
(A) The Modern Olympic Games include women and athletes from all nations, unlike the Ancient Games.
(B) The Ancient Games included women, while the Modern Games do not.
(C) The Ancient Games were international, while the Modern Games are restricted to Greeks.
(D) The Modern Games are purely religious, while the Ancient Games were secular.

293. What did the olive wreath awarded in the Ancient Olympics symbolize?
(A) Significant financial reward.
(B) A lifetime political appointment.
(C) The right to compete in the next games.
(D) Glory and divine favor.

294. How are the Asian and Commonwealth Games described in relation to the Modern Olympics?
(A) As precursors to the Ancient Olympic Games.
(B) As similarly structured events with a regional focus.
(C) As events with a global scope surpassing the Olympics.
(D) As competitions that have replaced the Olympic Games.

295. The revival of the Modern Olympic Games in 1896 is attributed to whom?
(A) The god Zeus
(B) An unnamed Greek athlete
(C) Pierre de Coubertin
(D) The founder of the Asian Games

Direction : Please read the following source carefully.

The governance of games and sports is managed by a complex structure of international and national bodies, each with specific functions and jurisdictions. At the apex of this structure for many sports are International Federations (IFs), such as FIFA for football or FINA for swimming. The primary function of these international bodies is to establish and enforce the rules of their respective sports globally, oversee international competitions like world championships, and ensure the sport's integrity. They work in conjunction with the International Olympic Committee (IOC) for sports included in the Olympic programme. At the national level, National Sports Federations (NSFs), affiliated with their respective IFs, are responsible for promoting and controlling their sport within a country. Their functions include conducting national championships, selecting national teams, and implementing development programmes. The actions of these bodies are often supported and sometimes overseen by government ministries or national sports authorities. In recognition of outstanding achievement, various prominent honours and awards are conferred upon athletes and coaches. Awards like the Olympic medals hold universal prestige. In the Indian context, prominent honours such as the Major Dhyan Chand Khel Ratna Award (for spectacular performance), the Arjuna Award (for consistent outstanding performance), and the Dronacharya Award (for eminent coaches) serve to recognize and incentivize excellence, acting as a major source of motivation for the sporting community.

Based on the above source, attempt the following five questions.

296. According to the text, what is a primary function of an International Federation (IF) like FIFA?
(A) To organize local school-level tournaments.
(B) To select the national team for a single country.
(C) To provide direct financial awards to all athletes.
(D) To establish and enforce the global rules of a sport.

297. What is the role of a National Sports Federation (NSF) as described in the paragraph?
(A) To promote and control a specific sport within one country.
(B) To set the international rules for all sports.
(C) To govern all sports globally.

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(D) To exclusively manage the Olympic Games.

298. The Dronacharya Award, as mentioned in the source, is specifically conferred upon whom?
(A) Athletes with the most spectacular performance in a year.
(B) Eminent coaches for their contributions.
(C) Athletes who have shown consistent outstanding performance.
(D) International Federation presidents.

299. Based on the passage, the relationship between an International Federation (IF) and a National Sports Federation (NSF) is typically one of:
(A) rivalry, as they compete for control.
(B) affiliation, with the NSF operating under the IF's global framework.
(C) independence, with no interaction between them.
(D) supervision, where the NSF controls the IF.

300. The source suggests that prominent honours and awards like the Arjuna Award serve to:
(A) recognize and incentivize excellence in sports.
(B) provide a regular salary to all athletes.
(C) fund the operations of National Sports Federations.
(D) select athletes for the Olympic Games.

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ANSWERS

1. (B) A process for developing physically and socially fit citizens through diverse physical activities.
Physical education is an integral part of the total educational process that uses physical activity as a medium to enhance the lives of individuals. It goes beyond simple exercise by aiming for the holistic development of citizens who are physically, mentally, and socially fit. By engaging in diverse activities, individuals develop the necessary skills and attitudes to contribute positively to society while maintaining a healthy lifestyle throughout their lives.

2. (A) Provide physical activities modified for the individual capacities and limitations of students with special needs.
The primary goal of adapted physical education is to ensure that students with disabilities receive the same benefits from physical activity as their peers. This involves modifying games, equipment, and teaching strategies to match the specific abilities and limitations of each individual. By tailoring the curriculum, educators provide a safe and supportive environment where every student can achieve success and improve their physical fitness, regardless of their challenges.

3. (C) Statement I is true, but Statement II is false.
Pragmatism emphasizes experiential learning where students engage in problem-solving activities rather than passive listening. This philosophy promotes a child-centered approach where the curriculum evolves based on the needs and interests of the learners. Consequently, a fixed or unchangeable curriculum contradicts these core values, as it fails to account for individual differences or the dynamic nature of learning environments. Effective instruction focuses on practical application and flexibility.

4. (D) Strong and obedient soldiers for military supremacy.
In the ancient Greek city-state of Sparta, the educational system was known as the Agoge, which focused exclusively on creating a powerful military force. Unlike the more balanced approach found in Athens, Spartan physical training was rigorous and often brutal, designed to instill discipline, endurance, and absolute obedience. The ultimate goal was to produce elite soldiers capable of maintaining Spartan dominance and ensuring the state's security.

5. (A) Both A and R are true and R is the correct explanation of A.
Per Henrik Ling developed a highly systematic approach to gymnastics in Sweden during the early nineteenth century. His work was revolutionary because it grounded physical movements in scientific principles of anatomy and physiology. By dividing his system into pedagogical, medical, military, and aesthetic categories, he ensured that every exercise served a specific, measurable purpose. This structured methodology aimed to improve the overall health and readiness of citizens.

6. (B) Principle of balance.
The principle of balance in recreation suggests that individuals need a variety of activities to offset the stresses and repetitive demands of their professional work lives. By engaging in recreational pursuits that differ significantly from their daily chores, people can achieve a state of physical and mental equilibrium. This refreshment is essential for maintaining long-term productivity and preventing burnout, as it allows the mind and body to recover.

7. (D) It is primarily motivated by extrinsic rewards and compulsion.
Recreation is defined as activity performed during leisure time that provides immediate and inherent satisfaction to the participant. A fundamental characteristic of recreation is its voluntary nature, meaning individuals choose to participate for the joy of the activity itself. When an action is forced or motivated solely by external rewards, such as money or trophies, it loses its recreational essence and becomes more akin to work or professional sport.

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8. (A) P-3, Q-4, R-1, S-2
Various pioneers shaped the history of physical education across Europe. Friedrich Ludwig Jahn established the Turnverein movement in Germany to promote national strength. Franz Nachtegall introduced gymnastics into the Danish school curriculum, while Per Henrik Ling developed the Swedish system based on scientific principles. In England, Archibald Maclaren advocated for a balanced approach to physical training. These individuals laid the foundation for modern physical education systems by establishing structured programs in their countries.

9. (C) A process of making informed decisions to lead a more balanced and fulfilling life.
Wellness is a proactive and multi-dimensional concept that goes beyond the mere absence of illness. It involves an active process where individuals make conscious choices to improve their physical, mental, and social well-being. By taking responsibility for their lifestyle habits, people can achieve a state of optimal health and fulfillment. This holistic approach ensures that all aspects of a person's life are integrated to promote longevity and happiness.

10. (A) The prevalence of sedentary lifestyles and processed foods.
Modern society faces significant hurdles in maintaining wellness due to rapid technological advancements and changes in food production. The shift toward office-based work and digital entertainment has led to a dramatic increase in sedentary behavior, which contributes to various chronic health conditions. Additionally, the widespread availability of highly processed, calorie-dense foods makes it difficult for individuals to maintain a balanced diet, further complicating the pursuit of a healthy and active lifestyle.

11. (D) 1, 2, 3, and 4.
Physical education encompasses several broad objectives that aim for the total development of the individual. Organic development focuses on improving physiological systems like the heart and lungs, while neuro-muscular development enhances coordination and motor skills. Additionally, participation in physical activities fosters essential social qualities and emotional stability. These four pillars collectively ensure that students grow into well-rounded individuals who are capable of managing both physical and social challenges throughout their entire lives.

12. (B) The ability to effectively demonstrate and communicate skills.
For a physical education teacher, the capacity to clearly demonstrate movements and communicate instructions is a vital competency. Physical learning relies heavily on visual observation and precise feedback, making demonstration a core part of the instructional process. Beyond theoretical knowledge, the teacher must be able to break down complex skills into manageable parts. This ensures that students understand the mechanics of the activity and can perform them safely and effectively.

13. (C) Command style.
In the command style of teaching, the instructor remains the sole decision-maker throughout the entire lesson. The learners are expected to respond immediately to specific cues or signals provided by the teacher, ensuring high levels of uniformity and discipline. This method is particularly effective when teaching large groups, ensuring safety during potentially dangerous activities, or introducing simple drills where synchronized movement is required. It prioritizes teacher control and immediate student response over independent exploration.

14. (B) 2, 4, 3, 1
The historical development of physical education in India follows a distinct timeline. The Hanuman Vyayam Prasarak Mandal was founded in 1914, followed by the YMCA College of Physical Education in 1920. Later, the Kunzru Committee provided significant recommendations for reform in the late fifties, and the Lakshmibai National College was established to provide advanced training. Understanding this chronology helps illustrate the evolution of formal physical education systems and the transition from traditional to modern training methods.

15. (A) Learn and internalize societal values, norms, and roles.
Sports serve as a powerful socializing agency by placing individuals in environments where they must interact with others according to established

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rules. Through participation, athletes learn the importance of teamwork, respect for authority, and the value of fair play. These experiences help individuals internalize the norms and values of their broader society. Ultimately, sports provide a practical laboratory for developing the social skills necessary to function effectively as a member of a community.

16. (B) Cooperation.
Team sports like basketball and football are fundamentally built on the concept of collective effort toward a common goal. For a team to be successful, individual players must work together, communicate effectively, and support one another on the field. This constant interaction directly promotes the value of cooperation. Unlike individual pursuits, team activities require participants to suppress personal ego for the benefit of the group, fostering a strong sense of unity and shared responsibility.

17. (B) 1, 2, and 4 only.
Modern trends in recreation reflect a shift toward activities that promote well-being and leverage technology. There is a notable increase in the popularity of outdoor adventure pursuits and wellness-oriented programs that address physical and mental health. Additionally, technology-based recreation, such as virtual reality games, has become more prevalent. Conversely, the demand for community-based programs remains strong as people seek social connection. These trends highlight the evolving ways individuals utilize their leisure time for rejuvenation.

18. (A) Traditional and indigenous games reflect the history and values of a culture.
Sports are deeply rooted in the history and traditions of societies worldwide, often serving as a reflection of cultural identity. Indigenous games carry the values, beliefs, and stories of previous generations, preserving them through active participation. By treating sports as cultural heritage, communities maintain a link to their past while celebrating their unique social fabric. These activities are more than just physical exercises; they are vital cultural expressions that connect individuals to their ancestral roots.

19. (C) Boxing and wrestling.
The Pankration was one of the most demanding and popular events in the Ancient Olympic Games. It was a combat sport that combined the techniques of boxing and wrestling, allowing almost any move except biting and eye-gouging. This event was designed to test the ultimate strength, skill, and endurance of the athletes. Its inclusion in the games reflected the ancient Greeks' high regard for physical prowess and their focus on preparing men for the rigors of warfare.

20. (A) Both A and R are true and R is the correct explanation of A.
The Olympic motto consists of four Latin words representing the core aspirations of the movement. "Citius, Altius, Fortius" translates to "Faster, Higher, Stronger," while the recently added "Communiter" means "Together." Pierre de Coubertin proposed the original motto to inspire athletes to strive for personal excellence. The addition of "Together" emphasizes the importance of unity and solidarity among nations during international sports competitions, reflecting the modern values of global cooperation and shared humanity.

21. (C) New Delhi.
The inaugural Asian Games were held in New Delhi, India, in 1951, marking a significant milestone in continental sporting history. The event was organized to promote friendship and cooperation among Asian nations following the end of World War II. Influential figures like G.D. Sondhi played a crucial role in bringing this vision to life. The success of the first games established a tradition that continues to bring athletes from across Asia together every four years for high-level competition.

22. (B) They are often referred to as the "Friendly Games".
The Commonwealth Games are a multi-sport event held every four years for member nations of the Commonwealth. They are uniquely known as the "Friendly Games" because they emphasize the shared history and cultural ties among the participating countries. While the competition is intense, the primary objective is to foster a spirit of goodwill and equality among the diverse nations. This inclusive atmosphere distinguishes

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the Commonwealth Games from other major international sporting events that focus purely on national rivalry.

23. (D) International Olympic Committee (IOC).
The International Olympic Committee is the supreme authority responsible for overseeing the entire Olympic Movement. Based in Switzerland, the IOC ensures the regular celebration of the games and promotes the values of Olympism worldwide. It owns all rights to the Olympic symbols and governs the various National Olympic Committees and International Federations. By setting high standards for ethics and fair play, the IOC maintains the prestige and integrity of the world's most famous sporting event.

24. (A) Sports Authority of India (SAI).
The Sports Authority of India is the primary national body responsible for the development of sports within the country. It manages vast infrastructure, including stadiums and training centers, and implements various government schemes to identify and nurture athletic talent. By providing elite coaching and financial support, SAI aims to improve India's performance on the international stage. It serves as the bridge between grassroots participation and high-performance sport, ensuring that resources are distributed across different disciplines and regions.

25. (C) Outstanding performance in sports and games over a period of four years.
The Arjuna Award is one of India's most prestigious sports honors, established to recognize consistent excellence at the national and international levels. To be eligible, a sportsperson must demonstrate outstanding performance over the preceding four years while also exhibiting qualities of leadership, sportsmanship, and discipline. The award serves as an inspiration for young athletes to dedicate themselves to their sport and strive for long-term success. It highlights the importance of sustained hard work and ethical conduct in athletics.

26. (A) Existentialism.
Existentialism is a philosophy that emphasizes individual freedom and the responsibility to create one's own meaning through choices. When applied to physical education, this approach encourages students to select activities that resonate with their personal interests and self-awareness. Rather than following a strictly dictated curriculum, learners are empowered to explore different movements and discover what physical activity means to them. This focus on subjectivity and personal agency fosters a deeper, more individualized connection to health and fitness.

27. (D) Friedrich Ludwig Jahn in Germany.
Friedrich Ludwig Jahn is often referred to as the father of German gymnastics due to his establishment of the Turnverein movement. He created the 'Turnplatz', an outdoor exercise area where young men practiced movements on apparatus like the parallel bars and horizontal bar. Jahn's primary goal was to strengthen the German youth and foster a sense of national pride and unity. His systematic approach to physical training had a lasting impact on physical education programs worldwide.

28. (A) P-4, Q-3, R-1, S-2.
Different educational philosophies provide unique frameworks for physical education. Pragmatism focuses on experiential learning through practical activities, while Idealism emphasizes the development of the mind and spirit. Realism grounds physical activity in scientific evidence and objective facts about the human body. Conversely, Naturalism views nature as the primary teacher, encouraging students to explore their physical capabilities within a natural environment. These varied perspectives shape how teachers design curricula and interact with students, ensuring a diverse range of instructional approaches.

29. (C) Served as the first institution in India to offer formal teacher training.
The establishment of the YMCA College of Physical Education in Madras in 1920 by Harry Crowe Buck was a turning point for Indian sports history. Before this, physical education lacked a standardized, professional approach to instruction. By offering the first formal teacher training courses, the college produced qualified professionals who could spread scientific physical training methods throughout the country. This institution played a vital role in modernizing the curriculum and establishing physical education

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as a respected academic and professional discipline.

30. (D) Hiking and camping in a national park.
Outdoor recreation is characterized by activities that take place in a natural setting and rely on the environment for the experience. Hiking and camping are quintessential examples, as they involve moving through and staying in wilderness areas like national parks. These activities provide a unique combination of physical challenge and mental relaxation through contact with nature. Unlike indoor pursuits, outdoor recreation encourages participants to adapt to changing weather conditions and diverse terrains, fostering a deep appreciation for the environment.

31. (C) 1, 2, and 4 only.
Effective physical education requires an understanding of diverse learner characteristics. Students enter the gymnasium with varying fitness levels and physical abilities, which teachers must accommodate. Motivation plays a critical role, whether it stems from internal enjoyment or external rewards. Furthermore, a student's cognitive development significantly impacts their ability to grasp complex rules and strategies. While prior experience does matter, the idea that it has no impact is incorrect, as previous learning often facilitates or hinders the acquisition of new motor skills.

32. (B) Coaches for their outstanding and meritorious work on a consistent basis.
The Dronacharya Award is India's highest honor for sports coaching, named after the legendary teacher from the Mahabharata. It recognizes individuals who have demonstrated exceptional dedication and success in training athletes to achieve international medals. To receive this award, a coach must show a track record of producing elite performers over several years. This award highlights the crucial role that instructors and mentors play in the success of athletes, emphasizing that coaching is a specialized and vital profession.

33. (B) Competition and cooperation are mutually exclusive and can never coexist in a sports setting.
Although competition and cooperation may seem like opposites, they are actually deeply intertwined within the world of sports. Teams must cooperate internally to compete effectively against opponents, and all participants must cooperate to follow the rules that make the contest possible. While competition can motivate individuals toward higher performance, it can also lead to negative behaviors if not managed correctly. Understanding that both elements are necessary for a healthy sporting environment is essential for athletes, coaches, and sports administrators.

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34. (A) Five continents united by Olympism.
The Olympic symbol, consisting of five interlaced rings of different colors on a white background, is one of the most recognized icons in the world. These rings represent the five major continents of the world—Africa, the Americas, Asia, Europe, and Oceania—that are united by the Olympic Movement. The interlacing of the rings symbolizes the friendship and cooperation that the games aim to foster among people from all nations, regardless of their diverse cultural or political backgrounds.

35. (A) Both A and R are true and R is the correct explanation of A.
Recreation is essential for holistic well-being because it provides a necessary break from the pressures of work and daily responsibilities. Engaging in enjoyable activities during leisure time helps individuals release pent-up emotions and significantly reduce stress levels. Furthermore, the sense of accomplishment gained from mastering a new hobby or participating in a social game refreshes the mind and body. This restorative process is vital for maintaining mental health and ensuring a balanced and productive lifestyle in the long term.

36. (D) The Tara Chand Committee.
Following India's independence, the Tara Chand Committee was established to review and provide recommendations for the improvement of physical education. One of its most significant contributions was the recommendation to establish a central institution dedicated to the training of physical education professionals. This ultimately led to the founding of the Lakshmibai National College of Physical Education in Gwalior. The committee's work laid the foundation for a more standardized and professional approach to the subject across the newly independent nation.

37. (C) Programs based on scientific evidence, physiological principles, and measurable outcomes.
Realism is a philosophy that emphasizes the importance of objective reality and scientific inquiry. In the context of physical education, a realist teacher would focus on the biological and physical truths of the human body. This means designing programs grounded in anatomy, physiology, and biomechanics. Progress is tracked through measurable data, such as fitness test scores and performance statistics. By prioritizing facts over abstract ideals or personal whims, the realist ensures that training is effective, safe, and based on proven results.

38. (B) The state-sponsored military and educational training regimen for all male citizens.
The Agoge was the rigorous and compulsory training program in ancient Sparta designed to transform boys into elite soldiers. Starting at the age of seven, Spartan males were subjected to intense physical exercises, survival training, and military drills. The system emphasized endurance, bravery, and absolute loyalty to the state above all else. By controlling every aspect of a young citizen's life, the Agoge ensured that the Spartan army remained one of the most feared and disciplined forces in the ancient world.

39. (A) 4, 1, 3, 2.
International multi-sport events have evolved over centuries, beginning with the Ancient Olympic Games in Greece during antiquity. The movement was revived in the modern era with the first Modern Olympics in 1896. Subsequently, the British Empire Games, now known as the Commonwealth Games, were established in 1930 to foster ties among member nations. Finally, the Asian Games were inaugurated in 1951 to promote friendship and sporting excellence specifically across the Asian continent. This sequence highlights the expanding scope of international athletic competition.

40. (A) Professional Wellness.
Wellness is a holistic concept that encompasses multiple aspects of a person's life, including physical, emotional, social, intellectual, financial, and spiritual health. While career satisfaction is important, "professional wellness" is not traditionally listed as one of the primary dimensions in standard health models. Instead, these models focus on internal states and external social or environmental factors that contribute to a balanced and fulfilling life. Achieving wellness requires attention to all these interconnected dimensions to ensure a high quality of life.

41. (C) Motivate, guide, and foster a positive team environment and good sportsmanship.
A sports leader carries a significant social responsibility that goes beyond simply calling plays or winning games. Their primary role is to act as a mentor and motivator, creating a supportive environment where every team member feels valued. By modeling good sportsmanship and ethical behavior, the leader influences the attitudes and actions of their teammates. This positive guidance fosters social cohesion and ensures that the experience of competition contributes to the personal and social growth of all participants.

42. (C) 1, 2, 4, and 5.
Teaching is a multifaceted and dynamic process that aims to facilitate learning and bring about positive changes in student behavior. It is considered both an art and a science, requiring creativity as well as systematic planning and evaluation. Effective educators create a supportive environment rather than adopting an authoritarian approach. This humane and social interaction involves a continuous cycle of preparation and assessment to ensure that the diverse needs of all learners are met within their specific cultural contexts.

43. (D) Military preparedness and public spectacles (gladiatorial contests).
Unlike the Greeks, who valued physical education for holistic development, the Romans viewed physical training through a more utilitarian and militaristic lens. Their programs were primarily designed to prepare men for the rigors of conquest and the Roman army. Additionally, physical activity in Rome was often associated with massive public spectacles, such as gladiatorial combat and chariot races, which served as entertainment for the masses. This focus on military strength and public entertainment defined the Roman approach to physical culture.

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44. (C) Statement I is true, but Statement II is false.
The Indian Olympic Association is the national body responsible for selecting and sending athletes to represent the country in major multi-sport events like the Olympics and Asian Games. It serves as the link between India and the international Olympic movement. Conversely, the Sports Authority of India is a government agency focused on sports development and infrastructure, whereas the governing body for cricket in India is the Board of Control for Cricket in India. These organizations have distinct and specialized roles within the sports ecosystem.

45. (C) He introduced gymnastics into the curriculum and trained new teachers.
Franz Nachtegall was a pioneering figure in Denmark who played a crucial role in the formalization of physical education. He was instrumental in making gymnastics a mandatory part of the school curriculum, recognizing its importance for the health and discipline of youth. Furthermore, Nachtegall established the first teacher training institution for physical education, ensuring that a new generation of instructors was equipped with the skills to teach gymnastics effectively. His work significantly influenced the development of school-based physical training across Europe.

46. (D) Major Dhyan Chand Khel Ratna Award - The highest honour for an Indian sportsperson.
India's national sports awards are designed to recognize excellence across various roles in the athletic community. The Major Dhyan Chand Khel Ratna is the most prestigious honor, given for the most outstanding performance over a four-year period. In contrast, the Arjuna Award recognizes consistent high-level performance, and the Dronacharya Award is specifically for exceptional coaching. These awards serve to inspire athletes and coaches while highlighting the government's commitment to promoting a robust sports culture throughout the nation.

47. (A) Use natural environments like parks and forests for activities, allowing for student exploration.
Naturalism as a philosophy suggests that education should follow the natural laws of human development and occur in a natural setting. A physical education teacher following this approach would avoid rigid, artificial gym environments in favor of outdoor spaces like parks or forests. Students are encouraged to explore their physical capabilities through movements that feel natural to them, such as running, climbing, or swimming. This child-centered method prioritizes the inherent joy of movement and the lessons learned from interacting with the environment.

48. (B) P-2, Q-4, R-3, S-1.
Major sporting events each possess unique historical roots and defining characteristics. The Ancient Olympics were held in Greece to honor Zeus, while the Modern Olympics were revived in 1896 by Pierre de Coubertin. The Commonwealth Games are widely celebrated as the "Friendly Games" due to their focus on shared history among member nations. The Asian Games, governed by the motto "Ever Onward," were established to promote continental unity through sport. Understanding these distinctions helps appreciate the diverse cultural significance of each event.

49. (B) Social interaction, light physical activity, and mental stimulation.
As individuals age, their recreational needs shift toward maintaining health and preventing social isolation. Recreational programs for senior citizens are specifically designed to provide gentle physical activity that improves mobility and balance without excessive strain. Equally important is the opportunity for social interaction, which helps combat loneliness and mental decline. By offering activities like walking clubs or group games, these programs enhance the overall quality of life for the elderly, supporting their physical, emotional, and social well-being.

50. (A) European immigrant gymnastic systems and the invention of basketball and volleyball.
The history of physical education in the United States is a blend of international influences and domestic innovation. Immigrants from Germany and Sweden brought their systematic gymnastics programs, which formed the early basis of school physical training. Over time, these were complemented by uniquely American inventions like basketball and volleyball, which offered new ways to engage in indoor team

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sports. This combination of structured European exercises and dynamic team games shaped the comprehensive and diverse physical education curriculum found in modern American schools.

51. (C) 1, 2, and 4 only.
Adapted Physical Education is a specialized sub-discipline designed to meet the unique needs of individuals with disabilities. Its foundation is often rooted in legal mandates that guarantee the right to inclusive and equitable education. A critical part of the process is individual assessment, which leads to the creation of an Individualized Education Program. While the ultimate goal is inclusion, it is not simply about mainstreaming students without support; rather, it involves providing necessary modifications and assistance to ensure successful and safe participation.

52. (D) Wellness is multidimensional, encompassing physical, mental, social, and other aspects of life.
Wellness is a comprehensive and dynamic concept that reflects the overall quality of an individual's life. It is not a static goal but a continuous journey involving various dimensions, including physical health, emotional stability, social connectivity, and intellectual growth. Achieving wellness is a personal responsibility that requires conscious effort and proactive lifestyle choices. By recognizing the interconnectedness of these different aspects, individuals can strive toward their full potential and lead a more balanced, fulfilling, and resilient existence.

53. (C) The teacher sequencing questions and tasks that lead the student to discover a concept or principle on their own.
The guided discovery method is a student-centered teaching strategy that encourages critical thinking and active participation. Instead of providing direct answers, the teacher carefully structures a series of questions or physical challenges that lead learners toward a specific objective. This process allows students to explore different possibilities and eventually "discover" the underlying principle of a movement or tactic. By engaging in this cognitive process, students develop a deeper understanding and better retention of the skills being taught.

54. (A) Both A and R are true and R is the correct explanation of A.
Sports possess a unique ability to bring people together, regardless of their social, economic, or ethnic backgrounds. On the playing field, individuals work toward a common goal, which requires them to look past their differences and build mutual respect. This shared experience acts as a powerful agent for social integration and can help break down deep-seated prejudices. By fostering communication and cooperation in a neutral environment, sports contribute to the development of a more inclusive and harmonious society.

55. (D) Training in traditional forms of wrestling (Kushti) and physical culture.
The 'Akhara' system is a cornerstone of traditional Indian physical culture, with a history spanning centuries. These centers were primarily dedicated to the practice of 'Kushti' or traditional wrestling, but they also focused on the overall development of strength and discipline. Training in an Akhara involved rigorous exercises, a strict diet, and a code of conduct that emphasized respect and self-control. This indigenous system played a vital role in preserving Indian martial arts and promoting physical fitness within the community.

NODIA

56. (A) Board games.
Indoor recreation refers to activities that are typically performed within the confines of a building and do not require large outdoor spaces or specific natural environments. Board games are a classic example, as they can be played almost anywhere and focus on mental strategy and social interaction. Unlike outdoor pursuits like trekking or river rafting, which involve physical challenges in nature, indoor activities offer a way to relax and engage with others regardless of weather conditions or physical terrain.

57. (C) Public building where wrestling and other physical training took place for boys.
In ancient Athens, the Palaestra was a vital social and educational institution dedicated to the physical training of young boys. It was primarily a wrestling school where students practiced various forms of combat and athletics under the guidance of instructors. The Palaestra was more than just a gym; it was a place where young

citizens developed physical strength, agility, and the competitive spirit valued by Athenian society. These facilities were central to the Greek ideal of a balanced education for citizens.

58. (A) To encourage rote memorization without understanding.
The fundamental objectives of teaching are to facilitate genuine learning, skill acquisition, and the development of positive values. Effective instruction aims to help students understand concepts deeply so they can apply them in real-world situations. Encouraging rote memorization is generally considered a poor educational practice because it does not foster critical thinking or long-term retention. Instead, teachers strive to shape attitudes and skills that empower students to become independent learners and responsible members of society who can think for themselves.

59. (D) "Ever Onward".
The motto of the Asian Games, "Ever Onward," was proposed by Pandit Jawaharlal Nehru, the first Prime Minister of India, during the inaugural games in 1951. This motto reflects the spirit of progress, growth, and the continuous pursuit of excellence among the nations of Asia. It serves as a reminder that the goal of the games is not just to compete but to move forward together in friendship and cooperation. This inspiring message remains a central theme for every edition of the event.

60. (A) 2, 4, 3, 1.
The Major Dhyan Chand Khel Ratna Award is India's highest sporting honor, and its recipients reflect the diverse excellence of the nation's athletes. Viswanathan Anand was the first to receive the award in 1991. He was followed by weightlifter Karnam Malleswari in 1995, tennis star Leander Paes in 1996, and cricket legend Sachin Tendulkar in 1997. Following this chronological order allows us to trace the history of the award and recognize the pioneers who first set the standard for sporting excellence in India.

61. (C) A wheelchair basketball league.
Recreational programs for individuals with disabilities are designed to be inclusive and accessible, often involving modifications to traditional sports. A wheelchair basketball league is a prime example, as it allows people with mobility impairments to engage in a dynamic team sport. These programs provide more than just physical exercise; they offer opportunities for social connection, competition, and personal growth. By removing barriers to participation, such initiatives ensure that everyone has the chance to experience the joys and benefits of an active lifestyle.

62. (D) Included a regimen of knightly exercises and manual labor in the curriculum.
Johann Bernhard Basedow founded the Philanthropinum in Germany as an experimental school that integrated physical activity into the academic curriculum. His innovative approach included "knightly exercises" like riding and fencing, as well as practical manual labor. Basedow believed that physical development was essential for the overall education of the child, a concept that was quite radical at the time. This school played a significant role in the history of physical education by demonstrating the value of a balanced and practical approach to learning.

63. (A) 1, 2, and 4 only.
Fair play is a fundamental social value in sports that goes beyond simply following the written rules. It involves a genuine respect for opponents, officials, and the game itself, regardless of the outcome of the competition. This ethical approach fosters a positive and respectful environment where athletes can compete with integrity. Winning is a goal, but it should never come at the expense of honesty or respect. Promoting fair play helps develop character and ensures that sports remain a positive influence on society.

64. (A) Active and continuous process involving personal choices and responsibility.
Achieving and maintaining wellness is not a one-time event or something that happens passively; it is an active and lifelong journey. It requires individuals to make conscious, daily choices regarding their diet, physical activity, and mental health. While external factors like public health policy and genetics play a role, the primary responsibility lies with the individual. This proactive approach ensures that a person is constantly working toward their full potential and adapting to the changing demands of their life and environment.

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65. (B) Pragmatism, because it emphasizes problem-solving and experiential learning.
Pragmatism is an educational philosophy that prioritizes learning through experience and the practical application of ideas. When a teacher asks students to create their own game and rules, they are engaging in a problem-solving process that requires creativity and cooperation. This hands-on approach allows students to test their ideas in real time and learn from the results. By focusing on the process of creation and adaptation, the teacher fosters critical thinking skills that are essential for both sports and everyday life.

66. (C) Statement I is true, but Statement II is false.
The Commonwealth Games are held every four years, bringing together athletes from a diverse group of nations with historical ties to the United Kingdom. While many participating countries were once part of the British Empire, eligibility is now based on current membership in the Commonwealth of Nations. Not every former colony is a member today, and the organization has evolved into a voluntary association of independent states. This distinction highlights the modern nature of the Commonwealth as a partnership based on shared values and cooperation.

67. (C) A state-controlled system aimed at producing elite international athletes.
During the Soviet era, Russia developed a highly centralized and state-controlled physical education system. The government viewed sporting success as a means to demonstrate national strength and the superiority of their political ideology. Consequently, resources were heavily invested in identifying and training talented athletes from a young age through scientific methods. This rigorous approach led to the production of numerous elite international competitors and a dominant presence in global sports. The system prioritized high performance and national prestige over individualized recreational choice.

68. (B) P-4, Q-1, R-3, S-2.
India's sports awards are categorized to recognize various contributions to the nation's athletic culture. The Arjuna Award is given for consistent performance by players, while the Dronacharya Award honors the essential work of coaches. The Major Dhyan Chand Khel Ratna is the highest sporting honor for an individual athlete's outstanding achievement. Additionally, the Rashtriya Khel Protsahan Puruskar recognizes the vital role of corporate entities and individuals in promoting sports. This comprehensive system ensures that excellence is acknowledged at every level of the sports ecosystem.

69. (C) The cognitive, affective, social, and physical traits of students that influence their learning.
In the context of teaching, learner characteristics encompass the wide range of individual traits that students bring to the educational environment. This includes their physical abilities, cognitive development, emotional maturity, and social background. Each of these factors can significantly influence how a student perceives information and acquires new skills. For a physical education teacher, understanding these diverse characteristics is essential for designing effective lessons that are inclusive and meet the unique needs of every learner in the class.

70. (B) The skills and interests developed can be enjoyed throughout one's life.
The "carry-over value" of a recreational activity refers to its potential to be continued and enjoyed as a person ages. Some sports may be too physically demanding for older adults, but many recreational pursuits, such as swimming, golf, or hiking, can be practiced throughout one's entire lifespan. Developing interests in these types of activities during youth ensures that an individual has the means to stay active and engaged in the future. This long-term benefit is a key goal of a comprehensive physical education.

71. (A) Both A and R are true and R is the correct explanation of A.
Idealism is a philosophy that views the mind and spirit as the primary reality and emphasizes the pursuit of perfection and moral values. In physical education, this approach places great importance on character development and the teacher as a role model. The curriculum is centered around activities that promote sportsmanship, discipline, and the internalizing of ideal values. By focusing on the development of the whole person, the idealist aims to produce individuals who are not only physically fit but also ethically sound.

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72. (A) A sacred period of peace ensuring safe travel for athletes and spectators.
The Ekecheiria, or Olympic Truce, was a fundamental tradition of the Ancient Olympic Games designed to ensure the safety of all participants. During this sacred period, all regional conflicts and wars among the Greek city-states were suspended. This allowed athletes, spectators, and diplomats to travel to and from Olympia without fear of attack. The truce highlighted the Greeks' high regard for the games and their belief that the pursuit of athletic excellence could temporarily transcend political and military rivalries.

73. (C) The governance, promotion, and development of that specific sport across the country.
National Sports Federations are the primary governing bodies for individual sports within a country. Their responsibilities include setting rules, organizing national championships, and selecting teams for international competitions. By managing the development of their specific sport from the grassroots to the elite level, these organizations ensure a structured and professional environment for athletes. While they work with national sports authorities, their focus remains dedicated to the growth and integrity of their particular discipline throughout the entire nation.

74. (C) 1, 2, and 3 only.
The history of physical education in England is characterized by a strong emphasis on character building through games. The "Muscular Christianity" movement was particularly influential, promoting the idea that physical fitness and sportsmanship were essential for moral development. Early sports like football and cricket evolved from local folk traditions into standardized games. Archibald Maclaren was another key figure who advocated for systematic physical training. Unlike some European nations, England developed its own unique approach to physical training that prioritized team sports over rigid gymnastics systems.

75. (A) Organic development.
Organic development is a primary objective of physical education that focuses on the improvement of the body's physiological systems. Through regular and appropriate physical activity, individuals can enhance their muscular strength, cardiovascular endurance, speed, and flexibility. These physical attributes are essential for overall health and the ability to perform daily tasks with vigor. By focusing on organic development, physical education provides the foundational physical health necessary for a productive life and for achieving success in more specialized athletic pursuits.

76. (B) A 19th-century cavalry soldier behind enemy lines.
The modern pentathlon was introduced to the Olympic Games by Pierre de Coubertin to test the skills required by a 19th-century soldier. The five events—fencing, swimming, equestrian show jumping, pistol shooting, and cross-country running—represent the challenges a soldier might face when delivering a message through enemy territory. This unique combination of disciplines requires a diverse range of physical and mental abilities, making it one of the most comprehensive tests of an athlete's versatility and resilience in the entire Olympic program.

77. (C) Is socially acceptable and contributes positively to society and the individual.
For an activity to be considered true recreation, it should be "pro-social" and "wholesome," meaning it aligns with societal values and benefits the participant. This implies that the activity should not be harmful to the individual or the community. Instead, it should promote health, relaxation, or personal growth in a way that is respectful of others. By engaging in wholesome recreation, individuals can rejuvenate their minds and bodies while also contributing to a more positive and healthy social environment for everyone.

78. (D) A state policy aiming for excellence in international competitions.
In recent decades, China has implemented a highly structured and state-driven physical education system with the goal of achieving dominance in international sports. The government invests heavily in specialized sports schools and scientific training methods to identify and develop elite talent from a very young age. This focused approach has led to China becoming a major powerhouse in the Olympic Games and other world championships. The system reflects

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the nation's use of sporting success as a way to enhance its global prestige and national pride.

79. (A) Both Statement I and Statement II are true.
Socialization in the context of sports occurs in two distinct but related ways. Socialization "into" sport refers to the initial process by which individuals are introduced to and become involved in physical activities, often influenced by family, peers, or the media. Socialization "via" sport, on the other hand, describes the learning of important life skills and societal values—such as teamwork, discipline, and respect—that occurs as a result of participation. Both processes are essential for the personal and social development of an athlete.

80. (B) To select teams for the Olympics and promote the Olympic movement.
The Indian Olympic Association is the national organization recognized by the International Olympic Committee. Its primary responsibility is to select and manage the Indian contingent for the Olympic Games, Asian Games, and Commonwealth Games. Beyond team selection, the IOA is dedicated to promoting the fundamental principles and values of Olympism within the country. While it collaborates with national sports federations, its unique role is to serve as the official representative of India in the global Olympic Movement and its prestigious multi-sport events.

81. (A) 1, 2, 3.
Ancient civilizations varied significantly in their approach to physical training. Sparta represents the most extreme military focus, with a state-run system dedicated solely to producing elite soldiers. The Roman Empire also prioritized physical training for its vast military, although it later emphasized public spectacles for entertainment. Athenian Greece, however, offered a more holistic and aesthetic approach, aiming for a balance between physical prowess and intellectual development. This sequence illustrates the transition from a purely utilitarian military training to a more comprehensive educational philosophy.

82. (A) The continued practice of indigenous games like Mallakhamb in India or Kendo in Japan.
Sports as cultural heritage involves the preservation of traditional physical activities that are deeply rooted in a society's history. Indigenous games like Mallakhamb in India or Kendo in Japan are more than just sports; they carry the values, stories, and cultural identity of previous generations. By continuing to practice and promote these activities, communities maintain a vital link to their past. These traditional games offer a unique perspective on a culture's history and are essential for preserving the world's diverse athletic traditions.

83. (C) Assess the student's needs and modify the activity for safe participation.
In the scenario of a student with a disability being hesitant to participate, the principles of Adapted Physical Education prioritize safety and inclusion. The first step for a teacher is to conduct a careful assessment of the student's specific needs and capabilities. Based on this information, the activity can be modified—perhaps by changing the rules, equipment, or the environment—to allow the student to participate successfully alongside their peers. This supportive approach builds confidence and ensures that every student can enjoy the benefits of physical activity.

84. (B) 2, 3, and 5.
Effective teaching is a complex and interactive process that involves more than just the simple delivery of information. It requires the creation of a conducive environment where learners feel supported and motivated to acquire new knowledge and skills. Furthermore, teaching is always influenced by the social and cultural context in which it occurs. Rather than being a one-way transmission, it is a dynamic relationship that aims to meet the diverse needs of students. Evaluation and assessment are also integral components that help guide the instructional process.

85. (C) To prepare individuals for sedentary desk jobs.
Physical education aims for the holistic development of the individual, which is the complete opposite of preparing them for a sedentary life. Its core goals include improving physical fitness, mental alertness, and social

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well-being through regular activity. By fostering the worthy use of leisure time and encouraging healthy habits, physical education helps prevent the negative health consequences associated with sedentary work. The ultimate aim is to equip individuals with the skills and mindset needed to maintain an active and healthy lifestyle throughout their entire lives.

86. (C) A is true but R is false.
The revival of the Modern Olympic Games in 1896 by Pierre de Coubertin was a monumental event in sporting history, but its motivations were far from purely financial. Coubertin's vision was to use international sport as a way to promote peace, understanding, and personal excellence among the youth of all nations. While the first games were held in Athens to honor their ancient roots, the goal was to establish a permanent global movement, not just a one-time financial boost for the host city.

87. (D) Synthesizing traditional Indian culture with modern methods for promotion.
The Hanuman Vyayam Prasarak Mandal in Amravati played a unique and vital role in the history of Indian physical education. Instead of focusing solely on Western sports, HVPM sought to preserve and promote traditional Indian activities like Mallakhamb, Yoga, and indigenous games. By synthesizing these traditional practices with modern organizational and instructional methods, HVPM helped create a distinctively Indian approach to physical culture. This institution was instrumental in revitalizing national pride and demonstrating the value of indigenous traditions in a modernizing world.

88. (A) To provide a break from work, reduce stress, and promote team building.
Corporate recreational programs are specifically designed to address the needs of employees in a high-pressure work environment. The primary objective is to provide a refreshing break that helps reduce stress and prevents burnout. These activities also offer a valuable opportunity for team building, as employees interact in a relaxed, non-work setting. By fostering social connections and improving overall well-being, such programs can lead to a more positive workplace culture and potentially increase long-term productivity and employee satisfaction within the organization.

89. (A) P-4, Q-1, R-2, S-3.
Several key concepts define the field of physical education and well-being. Wellness is a multi-dimensional state of optimal health, while recreation refers to voluntary activities chosen for personal satisfaction during leisure time. Adapted Physical Education involves modifying activities to ensure individuals with disabilities can participate successfully. Socialization is the complex process through which individuals learn the norms and values of their society. Understanding these distinct but related concepts is essential for anyone studying the social and educational aspects of physical activity.

90. (A) Watching a movie.
Passive recreation refers to activities that involve minimal physical exertion and often place the participant in the role of a spectator or listener. Watching a movie is a perfect example, as the individual is primarily receiving information or entertainment without being physically active. While such activities can provide mental relaxation and stress relief, they differ significantly from active recreation, such as tennis or swimming, which require bodily movement. A balanced lifestyle typically includes both active and passive forms of recreation for overall well-being.

91. (D) The development of sportsmanship and character.
Idealism as a philosophy focuses on the development of the mind and spirit, with a strong emphasis on moral values and character building. In a physical education setting influenced by Idealism, the primary goal is not just physical fitness or winning games, but the cultivation of virtuous qualities. Teachers using this approach prioritize sportsmanship, discipline, and respect for others. The playing field is viewed as a laboratory for developing the internal ideals and character traits that define a person of high moral standing.

92. (B) Bringing together a diverse group of nations in a spirit of friendship and fair competition.
The motto "Humanity, Equality, Destiny" encapsulates the unique spirit of the Commonwealth Games. These games are designed to celebrate the shared history and diverse cultures of the member nations of the

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Commonwealth. By prioritizing equality and friendship, the event aims to foster a sense of shared purpose and mutual respect among athletes. While the competition is high, the focus remains on the unity and goodwill that can be achieved through sport, reflecting the organization's broader goal of international cooperation.

93. (C) Balanced, aiming for a harmony of mind (music and literature) and body (gymnastics).
The Athenian educational system was based on the ideal of "kalokagathia," which sought a harmonious balance between physical prowess and intellectual development. Unlike the purely militaristic focus of Sparta, Athens provided its citizens with a comprehensive education that included gymnastics for the body and music and literature for the mind. This holistic approach aimed to produce well-rounded individuals capable of contributing to the cultural and political life of the city-state. Athenian physical education was part of a broader pursuit of excellence.

94. (D) The most spectacular and outstanding performance by a sportsperson over a period of four years.
The Major Dhyan Chand Khel Ratna Award is India's highest sporting honor, designed to recognize truly exceptional athletic achievement. It is awarded to the sportsperson who has demonstrated the most spectacular and consistent performance at the international level over the preceding four years. This prestigious award highlights the peak of sporting excellence and serves as a major inspiration for all Indian athletes. It recognizes the immense dedication and skill required to compete and succeed at the very highest levels of world sport.

95. (C) 1, 3, and 4 only.
The history of physical education in the USA has been shaped by several key movements and innovations. James Naismith's invention of basketball created a popular new team sport that could be played indoors. Clark Hetherington's "New Physical Education" shifted the focus toward the development of the whole child, integrating physical and social learning. Additionally, the playground movement was a vital social reform aimed at providing safe play spaces for urban children. While European systems did have some influence, American physical education developed its own unique identity through these domestic developments.

96. (B) Enhanced quality of life and reduced risk of chronic diseases.
Maintaining a high level of wellness provides significant long-term benefits that extend to every aspect of a person's life. By engaging in healthy behaviors and making conscious lifestyle choices, individuals can dramatically reduce their risk of chronic conditions like heart disease, diabetes, and obesity. This proactive approach to health results in increased energy levels, improved mood, and an overall enhanced quality of life. While it cannot eliminate all stressors, wellness provides individuals with the resilience and vitality needed to live more fulfilling lives.

97. (C) Statement I is false, but Statement II is true.
The command style of teaching is a highly structured method where the teacher makes all decisions and students follow specific cues. This approach is not suitable for developing complex tactical skills or independent decision-making, as it leaves little room for student choice or problem-solving. However, it is extremely effective for introducing simple drills, ensuring maximum safety, and maintaining strict discipline in large groups. By understanding the strengths and limitations of this style, physical education teachers can apply it appropriately within their broader instructional strategy.

98. (A) Setting and enforcing the international rules of their respective sports, and organizing world championships.
International governing bodies like FIFA for football and FIBA for basketball are essential for maintaining the global standards of their sports. Their primary functions involve setting and enforcing the rules of the game to ensure consistency across all nations. These organizations also organize and oversee major international competitions, such as the World Cup. By managing the development and integrity of their sports at a global level, they provide a structured framework that allows for fair and exciting competition among diverse nations.

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99. (C) The focus on winning overrides principles of fair play and respect for opponents.
Competition in sports can have a very positive social impact, but it also has the potential to become negative if not properly managed. When the desire to win at all costs becomes the primary motivation, individuals may engage in unsportsmanlike behavior, such as cheating or aggression toward opponents and officials. This shift in focus undermines the ethical foundations of sport and can lead to a toxic and disrespectful environment. Ensuring that competition remains centered on mutual respect and fair play is crucial for its positive development.

100. (D) Pierre de Coubertin.
Pierre de Coubertin, a French educator and historian, is widely recognized as the "Father of the Modern Olympic Games." Driven by a vision of international peace and the educational value of sport, he worked tirelessly to revive the ancient tradition of the Olympics. His efforts led to the first Modern Olympic Games in Athens in 1896 and the establishment of the International Olympic Committee. Coubertin's legacy lives on through the continued celebration of the games and their enduring commitment to the values of Olympism.

101. (C) Enhance coordinated movement by improving nervous and muscular links.
Neuro-muscular development is a vital objective of physical education that focuses on the efficient communication between the nervous system and the skeletal muscles. Through various physical activities and drills, individuals improve their motor control, balance, and reaction time. This enhanced coordination allows for more precise and effective movements, whether in everyday tasks or specialized athletic skills. By strengthening these physiological links, physical education helps individuals develop the physical competence and confidence needed to enjoy a wide variety of activities throughout their lives.

102. (A) Both A and R are true and R is the correct explanation of A.
The 'Playground Movement' in the late nineteenth and early twentieth-century United States was a significant social reform initiative. During this time of rapid urbanization, many children in crowded cities lacked safe places to play, leading to various social problems. The movement aimed to establish supervised playgrounds that would provide children with opportunities for healthy physical activity and social development. By creating these dedicated play spaces, reformers hoped to improve the overall well-being and character of the youth, particularly those in underprivileged urban neighborhoods.

103. (D) Param Vir Chakra.
India has a well-established system of national awards to recognize excellence in the field of sports and games. The Arjuna Award, Dronacharya Award, and Major Dhyan Chand Khel Ratna are all prestigious honors given to athletes and coaches for their outstanding contributions. In contrast, the Param Vir Chakra is India's highest military decoration, awarded for acts of exceptional bravery during wartime. While both represent peak achievement in their respective fields, the Param Vir Chakra is entirely separate from the nation's sporting awards system.

104. (A) Adventure recreation.
Adventure recreation consists of activities that involve an element of physical challenge, risk, and often take place in a natural, outdoor environment. Trekking, rock climbing, and river rafting are perfect examples, as they require participants to navigate difficult terrains and adapt to natural forces. These activities provide a unique sense of accomplishment and excitement that differs from more traditional or passive forms of recreation. By pushing their physical and mental limits, participants in adventure recreation can gain a deep sense of resilience and personal growth.

105. (A) 2, 1, 3, 4.
The history of physical education is a journey through various cultural and national movements. It began with the balanced development ideal in Ancient Athens. Centuries later, the German Turnverein movement and the Swedish gymnastics system emerged in Europe, both offering systematic approaches to physical training. In the early twentieth century, the American "New Physical Education" movement shifted focus toward the whole child. Following this chronological sequence helps us understand how different philosophies and systems have

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influenced the modern comprehensive approach to physical education.

106. (A) The pursuit of excellence in elite international sport.
Despite having different political and social systems, countries like Australia and China share a common goal of achieving high-level success in international sports. Both nations view sporting excellence as a matter of national pride and invest significant resources in athlete development and state-of-the-art facilities. This focus on elite performance often drives national sports policies and influences physical education programs. While their specific methods may differ, the ultimate aim of producing world-class competitors remains a primary objective for both countries in the modern sporting landscape.

107. (D) It is essential for mental and physical rejuvenation, personal growth, and social bonding.
Recreation is a vital component of a healthy and balanced life for individuals of all ages. It provides a necessary outlet for stress and a way to rejuvenate both the mind and the body during leisure time. Beyond relaxation, recreational activities offer opportunities for personal growth through the learning of new skills and for social bonding through shared experiences with others. By prioritizing recreation, individuals can improve their overall well-being and resilience, leading to a more fulfilling and productive lifestyle within their community.

108. (C) 1, 2, 4, and 5.
A successful physical education teacher must possess a diverse range of qualities to effectively guide and motivate students. Mastery over the subject matter and strong communication skills are fundamental for clear instruction. Furthermore, enthusiasm for teaching and empathy toward learners create a positive and supportive environment that encourages participation. In contrast, a rigid and authoritarian attitude is generally counterproductive, as it can discourage students and hinder their enjoyment of physical activity. A balanced approach that combines expertise with understanding is essential for student success.

109. (C) Traditional games and physical activities passed down through societal generations.
Cultural heritage in sports refers to the diverse range of traditional games and physical activities that are unique to a particular society and have been preserved over many generations. These activities are more than just physical exercises; they carry the values, beliefs, and history of a community's ancestors. By continuing to practice these traditional games, societies maintain a vital link to their past and celebrate their unique cultural identity. This heritage is essential for maintaining the world's rich and diverse sporting history.

110. (D) The British Empire Games.
The inaugural edition of what is now known as the Commonwealth Games was held in 1930 in Hamilton, Canada. At that time, the event was called the British Empire Games and included eleven nations competing in six sports. The primary goal was to foster friendship and cooperation among the various parts of the British Empire through athletic competition. Over the decades, the games have evolved significantly in name and scope, but they continue to emphasize the shared history and cultural ties of the member nations.

111. (A) Outlines specific goals, services, and modifications for students with special needs.
An Individualized Education Program is a legal document that ensures students with disabilities receive an education tailored to their unique needs. In adapted physical education, the IEP is essential for defining specific goals and the necessary modifications to activities and equipment. By focusing on the individual's strengths and challenges, the IEP provides a roadmap for success and safety in the gymnasium. This personalized approach is fundamental to the principle of inclusive education, ensuring that every student has the opportunity to participate and thrive.

112. (C) Statement I is true, but Statement II is false.
Leadership in sports provides a powerful platform for developing essential life skills, such as communication and decision-making. By taking on roles like team captain, athletes learn to guide and inspire their peers toward a common goal. However, a sports leader's role extends far beyond

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on-field tactics; they must also serve as mentors and motivators who foster a positive team environment. By modeling ethical behavior and supporting their teammates, leaders contribute to the social and personal growth of everyone involved in the sporting experience.

113. (B) Russia (Soviet Union).
The Soviet Union developed a highly structured and state-controlled physical education system designed to promote national fitness and readiness for labor and defense. A key feature of this system was the "Got-och-Vel-vilja" or "Ready for Labour and Defence" program, which set specific physical standards for different age groups. This mass-based approach aimed to ensure that the entire population remained physically fit and disciplined, reflecting the government's belief that a healthy and active citizenry was essential for the strength and stability of the socialist state.

114. (A) A proactive and holistic approach to achieving one's full potential.
Wellness is a more expansive and proactive concept than traditional definitions of health. While health often focuses on the absence of disease, wellness emphasizes the active pursuit of optimal well-being across multiple dimensions of life. It is a holistic approach that encourages individuals to take responsibility for their lifestyle choices and strive toward their full physical, mental, and social potential. By focusing on the quality of life and the prevention of illness, wellness empowers individuals to lead more balanced, resilient, and fulfilling lives.

115. (A) P-3, Q-4, R-1, S-2.
Several key figures and concepts have shaped the history of physical education in different nations. Friedrich GutsMuths is a central figure in German gymnastics history. Hjalmar Ling, the son of Per Henrik Ling, continued his father's work in Sweden. In the United States, Clark Hetherington was a major advocate for the "New Physical Education." Harry Crowe Buck played a crucial role in modernizing physical education in India through the YMCA. These pioneers provided the foundations for the structured physical education programs that exist around the world today.

116. (D) Develop control over their emotions and express them in a socially acceptable manner.
Emotional development is a key objective of physical education that focuses on helping individuals manage their feelings in the high-pressure environment of sports. Through competition, athletes experience a wide range of emotions, including joy, frustration, and anxiety. Physical education provides a safe laboratory where they can learn to control these impulses and respond to challenges with maturity and respect. By developing emotional stability and self-regulation, individuals become better equipped to handle both successes and failures in all areas of their lives.

117. (C) Sweden - Akhara.
Different cultures have developed unique institutions and settings for physical training. The Palaestra was a wrestling school in ancient Greece, and the Thermae were public bathing and socializing centers in ancient Rome. The Turnplatz was an outdoor exercise area associated with the German Turnverein movement. In contrast, the Akhara is a traditional training center deeply rooted in Indian culture, specifically for wrestling and martial arts. Sweden is known for its systematic gymnastics programs, but the term Akhara is uniquely associated with the physical culture of the Indian subcontinent.

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118. (B) Corporate entities and individuals who have played a visible role in the area of sports promotion and development.
The Rashtriya Khel Protsahan Puruskar is a unique Indian sports award that recognizes the critical role played by non-athletes in fostering a vibrant sporting culture. It is conferred upon corporate entities, both in the public and private sectors, and individuals who have significantly contributed to the promotion and development of sports. This award highlights the importance of financial support, infrastructure development, and sponsorship in providing athletes with the resources they need to succeed. By acknowledging these contributors, the government encourages more widespread investment in the nation's sporting future.

119. (D) Sparta, where girls also underwent physical training to become strong mothers.
In ancient Sparta, physical training was not limited to men; it was considered essential for women as well. Unlike in many other Greek city-states, Spartan girls were encouraged to participate in rigorous physical activities like running, wrestling, and throwing the javelin. The primary motivation for this was the belief that physically strong and healthy women would bear strong and healthy children for the Spartan state. This unique focus on women's physical fitness was a defining characteristic of Spartan society and its emphasis on military strength and national survival.

120. (C) A is true but R is false.
Pragmatism is a philosophy that views reality as dynamic and ever-changing, which is the opposite of a fixed and unchangeable state. In physical education, a pragmatist approach emphasizes learning through experience and problem-solving, leading to a flexible curriculum that can adapt to the needs of the students. Consequently, while the assertion correctly describes a pragmatist curriculum, the reason is false because it misrepresents the fundamental tenet of pragmatism regarding the nature of reality and knowledge. Pragmatism values practical application and constant growth.

121. (C) Contradictory health advice that makes it difficult to make informed choices.
In the modern digital age, people are often overwhelmed by a vast amount of health-related information from diverse sources, which is known as information overload. This abundance of data can be problematic when it includes contradictory advice on diet, exercise, and wellness. Such inconsistency makes it difficult for individuals to determine which information is credible and relevant to their specific needs. Navigating this complex landscape requires critical thinking and the ability to seek out evidence-based information to make informed decisions about one's own well-being.

122. (A) Appropriate for the specific learning objective, the learners' abilities, and the available resources.
A good teaching method in physical education must be adaptable and multifaceted to meet the diverse needs of all students. Rather than relying on a single approach, effective instructors choose methods that align with the specific goals of the lesson and the capabilities of the learners. They must also consider the available equipment and space. By being flexible and student-centered, teachers can ensure that their instruction is inclusive, safe, and effective in helping every student acquire new skills and develop a positive attitude toward physical activity.

123. (A) 1, 2, and 4 only.
The Asian Games are a premier multi-sport event that brings together athletes from across the continent every four years. They are governed by the Olympic Council of Asia and are guided by the inspiring motto "Ever Onward." While the games have grown significantly in size and scope, it is important to remember their origins. The first Asian Games were actually held in New Delhi, India, in 1951, not in Tokyo. This event serves as a powerful symbol of continental unity and friendship through the medium of athletic competition.

124. (B) Internalizes values like sportsmanship, teamwork, and discipline.
The ultimate goal of the socialization process in sports is not necessarily to produce elite athletes, but to help individuals internalize positive societal values. When a participant learns to respect the rules, cooperate with teammates, and handle both victory and defeat with grace, the socialization process is considered successful. These internalized values—such as discipline and fair play—benefit the individual far beyond the playing field, helping them to become responsible and effective members of their broader community and society at large.

125. (C) Johann Christoph Friedrich GutsMuths.
Johann Christoph Friedrich GutsMuths is often called the 'Grandfather of German Gymnastics' because of his early and influential contributions to the field. He was a pioneer in developing a systematic approach to physical education for schools, which he detailed in his famous book, 'Gymnastics for the Young.' GutsMuths believed that physical training was essential for the health and moral development of children. His work laid the groundwork for later movements, such as the Turnverein, and had a significant impact

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on the development of physical education across Europe.

126. (D) Developing leadership qualities and respect for others.
Social development is a crucial objective of physical education that focuses on the interactions and relationships between individuals. Participation in team sports and group activities provides numerous opportunities for students to develop essential social skills, such as leadership, cooperation, and respect for opponents and officials. These experiences help individuals learn how to function effectively within a group and to value the contributions of others. By fostering these qualities, physical education contributes to the development of well-rounded citizens who can navigate the complexities of social life.

127. (C) Statement I is false, but Statement II is true.
Recreation is fundamentally defined by its voluntary nature and the personal enjoyment it provides, rather than by external rewards like prize money or professional success. While some recreational activities may involve elements of competition, the primary aim is personal satisfaction and relaxation during one's leisure time. When winning and earning money become the dominant motivations, the activity loses its recreational character and becomes more akin to a job or professional sport. Understanding this distinction is essential for appreciating the restorative and social benefits of true recreation.

128. (B) Johann Christoph Friedrich GutsMuths of Germany.
Franz Nachtegall, a key figure in the development of physical education in Denmark, was deeply influenced by the work of the German pioneer Johann Christoph Friedrich GutsMuths. Nachtegall applied many of GutsMuths' systematic ideas to the Danish school system, leading to the introduction of gymnastics as a mandatory subject. By building on the established principles of the German system, Nachtegall was able to create a structured and effective physical education program that served as a model for other nations and ensured the health of the Danish youth.

129. (B) P-4, Q-2, R-1, S-3.
Several important terms define the study of physical education and its social context. Teaching aptitude refers to the potential and competence required for effective instruction, while learner characteristics are the specific traits of students that influence their learning. Wellness is a holistic state of well-being across multiple dimensions, and cultural heritage in sports includes the traditional games and activities of a society. Understanding these concepts allows for a more comprehensive approach to designing and delivering effective physical education programs that respect both individual and cultural differences.

130. (A) Students working in pairs to perform skills and provide feedback to each other.
The reciprocal style of teaching is a student-centered approach that promotes social interaction and peer learning. In this method, students work in pairs, with one person performing a skill while the other observes and provides feedback based on criteria provided by the teacher. This process encourages students to analyze movements and communicate effectively with their peers. By taking on the role of both learner and observer, students develop a deeper understanding of the skill and improve their ability to give and receive constructive criticism.

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131. (C) Public games and festivals that included chariot races and theatrical performances.
The Ludi Romani were a major religious festival and set of public games in ancient Rome, held annually in honor of the god Jupiter. These events were a central part of Roman social life and included a variety of entertainments, such as chariot races, theatrical performances, and athletic contests. While the games had religious origins, they also served as a way for the Roman state to entertain and pacify the masses. The Ludi Romani reflect the importance of public spectacles and organized recreation in the Roman Empire.

132. (D) Promoting sports and managing sports infrastructure throughout India.
The establishment of the Sports Authority of India in 1984 marked a significant commitment by the Indian government to the systematic development of sports. SAI's primary functions

involve the creation and management of state-of-the-art sports infrastructure across the country, as well as the implementation of various schemes to identify and nurture young talent. By providing elite coaching and financial support to athletes, SAI aims to improve India's competitive standing in international sports. It serves as the central agency for coordinating the nation's efforts to promote a robust and inclusive sports culture.

133. (B) 1, 3 and 4.
Recreation is guided by several core principles that ensure it remains a positive and restorative experience for individuals. A fundamental characteristic of recreation is that it must be voluntary, meaning individuals choose to participate during their leisure time. It should also provide a genuine sense of personal satisfaction and be socially acceptable, contributing positively to the well-being of the individual and the community. While some activities may be physically strenuous or involve business aspects, these are not universal requirements for an activity to be considered recreation.

134. (B) To develop and protect the Olympic Movement in its country.
National Olympic Committees, such as the Indian Olympic Association, play a vital role in the global Olympic Movement. Their primary function is to foster and safeguard the fundamental principles and values of Olympism within their respective nations. This involves selecting and managing the national delegation for the Olympic Games and other major multi-sport events. By working closely with national sports federations and the International Olympic Committee, NOCs ensure that the spirit of friendship, solidarity, and fair play is promoted throughout the national sporting community.

135. (D) Student choice and finding personal meaning in diverse physical activities.
Existentialism is a philosophy that emphasizes the importance of individual freedom, subjectivity, and the responsibility to create one's own meaning. When applied to physical education, an existentialist approach would prioritize student choice over a rigid and standardized curriculum. Students are encouraged to explore a variety of physical activities and find those that resonate with their personal interests and values. The teacher acts as a facilitator who helps students discover how movement can contribute to their self-awareness and personal growth, making the educational experience deeply individual.

136. (A) Both A and R are true and R is the correct explanation of A.
The social environment surrounding athletic competition, including the influence of coaches, parents, and peers, plays a significant role in shaping an athlete's behavior. When this environment places an excessive emphasis on winning above all else, it can exert immense pressure on individuals to achieve success at any cost. This pressure may lead athletes to compromise their ethical standards and engage in unsportsmanlike conduct, such as cheating or aggression. Therefore, fostering a supportive environment that values fair play and respect is essential for the positive development of athletes.

137. (C) It grew out of public school games influenced by Muscular Christianity.
The history of physical education in England is uniquely characterized by the importance placed on team sports and games, particularly within its famous public schools. During the nineteenth century, the "Muscular Christianity" movement promoted the idea that physical fitness and sportsmanship were essential for building moral character and "manliness." This philosophy led to the formalization of games like football, rugby, and cricket as part of the educational experience. Unlike the more rigid gymnastics systems of continental Europe, the English approach emphasized the social and ethical lessons learned through competitive team sports.

138. (A) 1984, Los Angeles.
The inclusion of the women's marathon in the 1984 Los Angeles Olympic Games was a landmark event for female athletes and the global sporting community. For many decades, women were excluded from long-distance running events due to outdated beliefs about their physical capabilities. The successful debut of the women's marathon proved these assumptions wrong and marked a significant step toward gender equality in international athletics. This historic moment inspired countless women around the world to pursue their own athletic goals and helped to

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challenge long-standing stereotypes about female endurance and strength.

139. (D) Flexibility and adaptability.
In the context of physical education, flexibility and adaptability are crucial characteristics of effective teaching. A teacher who uses a variety of instructional methods—such as command, practice, and reciprocal styles—within a single lesson demonstrates the ability to adjust their approach to meet different learning goals and student needs. This diverse strategy ensures that all students are engaged and that the teaching is effective for the specific task at hand. By being adaptable, the teacher can create a dynamic and inclusive learning environment that fosters skill acquisition and enjoyment for every student.

140. (A) 4, 1, 3, 2.
India's national sports awards have been established over several decades to recognize excellence across the sporting landscape. The Maulana Abul Kalam Azad Trophy, awarded to the top-performing university, was instituted first in 1956. This was followed by the prestigious Arjuna Award for outstanding players in 1961 and the Dronacharya Award for coaches in 1985. Finally, the Major Dhyan Chand Khel Ratna, the nation's highest sporting honor, was established in the early nineties. Following this chronological sequence allows us to trace the growing recognition and institutionalization of sports in India.

141. (C) PE is curricular and educational, while recreation occurs in leisure time.
While physical education and recreation both involve physical activity, they serve distinct purposes and occur in different settings. Physical education is a formal, curricular part of the educational system, with structured lessons aimed at achieving specific learning objectives and holistic development. In contrast, recreation refers to voluntary activities that individuals choose to participate in during their leisure time for the primary purpose of enjoyment and personal satisfaction. Understanding this difference is essential for recognizing how each contributes uniquely to an individual's overall health, learning, and well-being across their entire lifespan.

142. (D) Scientific facts, data, and the physiological effects of exercise.
Realism is a philosophy that emphasizes the importance of objective reality and scientific inquiry. When applied to the field of physical education, a realist approach would favor a curriculum that is grounded in the established truths of the human body. This means designing programs based on scientific facts from fields like anatomy, physiology, and biomechanics. Progress is monitored using objective data and measurable outcomes, such as fitness test results. By prioritizing evidence-based practices over personal opinions, the realist ensures that the physical education program is effective, safe, and scientifically sound.

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143. (A) To decide the rules for each individual sport.
The International Olympic Committee is the supreme authority of the global Olympic Movement, but its role is distinct from that of individual sports governing bodies. While the IOC selects host cities and promotes the values of Olympism, it does not set the rules for the specific sports included in the games. Instead, that responsibility belongs to the respective International Federations, such as FIFA for football or World Athletics for track and field. This clear division of labor ensures that each sport is governed by specialists while the IOC maintains the overall integrity of the games.

144. (B) 1, 2, and 3 only.
The history of physical education is a diverse tapestry of national systems and philosophies. In ancient Greece, Sparta focused purely on military training, while Athens sought a harmonious balance between mind and body. Later, the Roman system also prioritized physical fitness for military and entertainment purposes. In the nineteenth century, Per Henrik Ling developed the Swedish gymnastics system, which was based on scientific principles and had pedagogical, medical, and military components. However, Ling's system was not primarily for aesthetic purposes; rather, it aimed to improve the health and efficiency of the Swedish population.

145. (B) The principles and standards of behavior, such as honesty, teamwork, and discipline, learned through sports.
Social values in the context of sports refer to the essential ethical principles and behavioral standards that are developed through participation in physical activity. By competing according to rules and working together toward common goals, athletes learn the importance of honesty, teamwork, discipline, and respect for others. These values are fundamental for the personal and social development of individuals, helping them to become responsible and effective members of their broader community. The playing field serves as a powerful practical laboratory for internalizing these values and applying them to all areas of life.

146. (A) Improved mental health and stress reduction.
Engaging in regular recreational activities provides significant psychological benefits that contribute to overall well-being. These pursuits offer a vital outlet for relaxation and help individuals to disconnect from the pressures of work and daily responsibilities. Research has consistently shown that participation in enjoyable activities can lead to improved mental health, reduced stress levels, and a more positive outlook on life. By prioritizing leisure and recreation, individuals can enhance their resilience and maintain a better balance between their personal and professional lives, leading to a more fulfilling existence.

147. (C) Statement I is true, but Statement II is false.
The Kunzru Committee was a significant post-independence initiative in India established to review and provide recommendations for the improvement of physical education and sports. The committee's report emphasized the importance of making physical education a more central and structured part of the school curriculum to ensure the holistic development of youth. It did not recommend abolishing the subject; instead, it sought ways to standardize and enhance its delivery across the nation. The committee's work played a vital role in shaping the modern physical education and sports landscape in newly independent India.

148. (D) Understanding learner characteristics.
Effective teaching requires a deep understanding of the diverse traits and backgrounds that students bring to the classroom. This ability to recognize and respond to a learner's motivation, prior knowledge, and learning style is a fundamental part of "understanding learner characteristics." By tailoring their instruction to meet these unique needs, teachers can create a more inclusive and effective learning environment. This student-centered approach is essential for physical education, where individuals may have vastly different physical abilities and attitudes toward activity. Recognizing these differences is the first step toward helping every student succeed.

149. (C) Demonstrate collective unity, discipline, and strong national pride.
The physical education system of the former Soviet Union was highly centralized and used as a powerful tool for political and social control. Mass drills and synchronized activities were a prominent feature, designed to demonstrate the collective unity and discipline of the population. These large-scale performances served to instill a sense of national pride and to show the strength and organization of the socialist state. By emphasizing the importance of the group over the individual, these activities reinforced the government's ideology and served as a visible manifestation of national strength.

150. (C) A is true but R is false.
Adapted Physical Education is a specialized field dedicated to modifying activities to ensure that individuals with disabilities can participate successfully and safely. This approach is rooted in the belief that everyone should have access to the benefits of physical activity. However, the principle of inclusion does not suggest that separating students with disabilities is always the best practice. In fact, modern educational philosophy emphasizes integrating students into regular settings whenever possible, provided they have the necessary support. True inclusion focuses on adapting environments and activities to bring all students together.

151. (D) All India Football Federation (AIFF).
National Sports Federations are the primary governing bodies for individual sports within a country. In India, the All India Football

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Federation is responsible for the overall governance, promotion, and development of football across the nation. This includes setting rules, organizing national leagues, and selecting the national team for international competitions. While organizations like the Sports Authority of India provide infrastructure and broad support, the AIFF is the specific body that controls and directs the future of football in the country, ensuring it adheres to international standards.

152. (A) Influencing and guiding a team toward goals while upholding sporting values.
Leadership in sports is a multi-dimensional role that involves more than just individual talent or technical expertise. A true sports leader is someone who can guide and inspire their team toward a common goal while consistently modeling the values of sportsmanship and fair play. This involves motivating others, handling conflicts effectively, and fostering a positive team environment where everyone feels valued. By demonstrating integrity and resilience, a leader influences the attitudes and behaviors of their teammates, contributing to the personal growth and collective success of the entire group.

153. (A) P-4, Q-1, R-2, S-3.
Major sporting events have distinct historical origins that connect them to specific host cities and countries. The first Modern Olympic Games were held in Athens in 1896, while the inaugural Asian Games took place in New Delhi in 1951. The first edition of the British Empire Games, now the Commonwealth Games, was hosted in Hamilton, Canada, in 1930. The Ancient Olympics are eternally linked to their namesake city, Olympia. Recognizing these foundational locations helps us to appreciate the global history and evolving scale of international athletic competition over time.

154. (A) A sense of nationalism and the goal of strengthening the German people for national liberation.
Friedrich Ludwig Jahn established the Turnverein movement in early nineteenth-century Germany during a time of political fragmentation and foreign occupation. His primary goal was to use physical training to create strong, disciplined, and unified citizens who could fight for German national liberation. The movement was deeply patriotic, emphasizing traditional German values and a shared sense of national identity. Jahn's approach to gymnastics was more than just physical exercise; it was a means of fostering national pride and preparation for the struggle for a unified German state.

155. (D) Wellness is a one-dimensional concept focusing only on physical fitness.
Wellness is a complex and multi-dimensional concept that reflects the overall quality of an individual's life. Contrary to the idea that it only focuses on physical fitness, wellness encompasses a variety of interconnected dimensions, including emotional, social, intellectual, and spiritual health. It is a dynamic and proactive process where individuals make conscious choices and take responsibility for their own well-being. By recognizing that these different aspects of life are all essential for health, individuals can strive toward a more balanced, resilient, and fulfilling existence that goes beyond mere physical fitness.

156. (B) Technology-based recreation.
The rise of e-sports—competitive video gaming—is a prominent example of how technology is reshaping the landscape of modern recreation. These activities provide a way for individuals to engage in mental competition and social interaction within a virtual environment. As technology becomes more integrated into daily life, these digital forms of entertainment have grown in popularity, offering new ways for people to utilize their leisure time. This trend highlights the evolving nature of recreation and the increasing importance of technology in creating diverse and accessible opportunities for leisure and social engagement.

157. (C) Idealism.
Idealism is a philosophy that emphasizes the importance of the mind and spirit, with a strong focus on moral values and the pursuit of perfection. In physical education, this approach places significant importance on the role of the teacher as a moral and healthy role model for students. The idealist believes that by exhibiting ideal character and physical health, the teacher can inspire students to strive for these same qualities in their own lives. The playing field is viewed as a place to cultivate the internal virtues that define a person of integrity.

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158. (D) 1, 2, 3, and 4.
Several key figures and institutions have played a pivotal role in the history of physical education in India. Harry Crowe Buck established the YMCA College in Madras, while the Vaidya Brothers founded the influential HVPM in Amravati. Post-independence, individuals like P.M. Joseph, the first principal of LNCPE, and G.D. Sondhi, who was instrumental in the Asian Games, continued to advance the field. These pioneers collectively contributed to the professionalization and modernization of physical education, ensuring that it became a recognized and essential part of the nation's educational and cultural fabric.

159. (A) Excellence and virtue.
In ancient Greece, the concept of 'Arete' was a central cultural ideal that represented the pursuit of excellence and virtue in all areas of life. It was not limited to physical prowess but also included moral, intellectual, and social achievement. Both physical and intellectual contests were viewed as a way for citizens to demonstrate their Arete and strive for personal and civic perfection. This multifaceted ideal shaped the Greek educational system, which aimed to produce well-rounded individuals who were physically strong, intellectually capable, and ethically sound for their city-state.

160. (B) Acts as a facilitator and guide rather than just a dispenser of information.
The ultimate goal of teaching is to facilitate meaningful learning and skill acquisition, rather than just the passive transmission of facts. This is most effectively achieved when the teacher acts as a facilitator and guide, creating a supportive environment that encourages student inquiry and participation. By using a variety of instructional methods and responding to individual needs, the teacher helps students become active participants in their own education. This student-centered approach fosters critical thinking and a deeper understanding of the subject matter, leading to long-term retention and personal growth.

161. (B) Gentle yoga, walking club, board games, and social dance sessions.
When designing recreational programs for the elderly, it is essential to focus on activities that are safe, accessible, and address their specific physical and social needs. Gentle yoga and walking clubs provide light physical activity that can improve mobility and balance without causing excessive strain. Board games and social dance sessions offer valuable opportunities for mental stimulation and social interaction, which are crucial for combating loneliness and cognitive decline. By providing a balanced program that addresses multiple dimensions of well-being, physical educators can significantly enhance the quality of life for senior citizens.

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162. (C) Statement I is true, but Statement II is false.
The "Muscular Christianity" movement, which emerged in nineteenth-century England, was deeply rooted in the belief that physical fitness and sportsmanship were essential for moral development. Proponents of this philosophy argued that a strong and active body was a necessary vessel for a strong and active spirit. Rather than being secular, the movement actively promoted the connection between physical activity and religious or moral values, viewing sports as a way to develop "manliness" and virtuous character. This movement had a significant and lasting impact on the development of physical education and sports in British schools.

163. (C) Implementing national sports policies and managing national sports facilities.
The Sports Authority of India is the premier national agency responsible for the overall promotion and development of sports within the country. Its primary functions include the implementation of various government schemes to identify and nurture young talent and the management of major national sports facilities. By providing elite coaching, scientific support, and specialized training environments, SAI aims to improve India's performance on the international stage. It serves as the central body for coordinating national efforts to create a robust and inclusive sports culture from the grassroots to the elite level of competition.

164. (A) 2, 3, 1, 4.
The history of the Modern Olympics is characterized by its continuous expansion and evolution. It began with the revival of the games in Athens in 1896. This was followed by the inclusion of women in Olympic events during the early twentieth century and the introduction

of the first Winter Olympics in 1924. Much later, the first Youth Olympic Games were held in 2010 to engage younger generations with the Olympic values. Following this chronological order allows us to trace the growing inclusivity and diverse scope of the most prestigious sporting event in the world today.

165. (C) Teaches individuals the norms and values of their society.
A "socializing agency" is an institution or group that helps individuals learn the roles, norms, and values that are essential for functioning effectively within their society. Sports serve as a powerful socializing agency by placing individuals in environments where they must interact with others according to established rules and work together toward common goals. Through these experiences, participants learn the importance of teamwork, respect, and fair play. This process helps to internalize the ethical and behavioral standards of the broader community, contributing to the development of responsible and socially adept individuals.

166. (B) Bowling.
Indoor recreational programs are characterized by activities that take place within a building and are not dependent on large outdoor spaces or specific natural environments. Bowling is a classic example of an indoor activity that provides both physical activity and social interaction in a controlled setting. Unlike outdoor pursuits like cycling or canoeing, which involve navigating natural terrains and adapting to weather conditions, bowling can be enjoyed year-round regardless of the environment. This accessibility makes indoor programs a popular and important part of a community's recreational offerings for individuals of all ages.

167. (C) A is true but R is false.
Naturalism is a philosophy that views nature as the primary teacher and suggests that education should follow the natural developmental patterns of the child. In physical education, this approach prioritizes child-centered activities that align with a student's natural impulses and abilities. Consequently, the assertion correctly describes the naturalist's preference for a curriculum based on nature. However, the reason is false because it misrepresents the fundamental tenet of naturalism, which actually rejects rigid and artificial societal structures in favor of learning from and through the natural laws of human growth and environment.

168. (A) The inherent potential of an individual to acquire the skills and competencies required for effective teaching.
Teaching aptitude refers to the natural ability or potential that an individual possesses to become a successful and effective instructor. It is not just about knowing a subject well; it involves the capacity to learn how to communicate ideas, manage a classroom, and motivate learners. This aptitude is a combination of personal traits and the potential to acquire the specialized skills and competencies required for the teaching profession. Recognizing and nurturing this aptitude is essential for producing high-quality educators who can inspire their students and facilitate meaningful learning in the classroom or gymnasium.

169. (C) To recognize the top overall performing university in sports.
The Maulana Abul Kalam Azad Trophy is a prestigious national honor in India, named after the country's first Education Minister. It is awarded annually to the university that demonstrates the best overall performance in sports across various national and international competitions. The goal of the trophy is to encourage and promote a healthy and competitive sports culture among Indian universities. By recognizing the achievements of higher education institutions, the award highlights the vital role that universities play in identifying and nurturing the nation's future athletic talent and promoting holistic development.

170. (D) 1, 2, 3, 4 and 5.
Physical education is a comprehensive field that aims for the multifaceted development of the whole person. Its objectives include organic development for physical health, neuromuscular coordination for motor skills, and mental development for understanding rules and strategies. Furthermore, participation in activities fosters desirable social attitudes and contributes to emotional stability. By addressing these diverse dimensions—physical, mental, social, and emotional—physical education

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provides a well-rounded and holistic experience that prepares individuals for the complex challenges of life. These integrated objectives are fundamental to the overall aim of producing healthy and responsible citizens for society.

171. (D) Large public centers for recreation and socializing.
The Thermae were massive public bathing complexes in ancient Rome that served as central hubs for social and recreational life. These facilities were much more than just places for hygiene; they included spaces for physical exercise, libraries, and areas for socializing and philosophical discussion. The Thermae were accessible to citizens of all social classes and reflected the importance that Roman society placed on public health and organized leisure. These impressive structures remain a powerful symbol of the Roman commitment to providing large-scale recreational facilities for the well-being of the urban population.

172. (B) An aim is the ultimate, long-term purpose, while objectives are the specific, short-term steps to achieve that aim.
In the planning and delivery of physical education, it is important to distinguish between "aims" and "objectives." An aim is a broad and general statement of the ultimate, long-term purpose of the program, such as "achieving holistic development." Objectives, on the other hand, are the specific, measurable, and short-term steps that are designed to lead toward that overall aim, such as "improving cardiovascular endurance by 10%." By setting clear objectives, educators can more effectively plan their instruction and monitor the progress of their students toward achieving the broader long-term goals.

173. (C) Provide a framework for including students with disabilities.
The inclusion spectrum is a vital tool in adapted physical education that provides a structured framework for including students with disabilities in physical activity. It outlines various ways that activities can be modified—from full participation in regular games to separate specialized activities—depending on the needs and capabilities of each student. The goal of the spectrum is to move beyond a "one-size-fits-all" approach and ensure that every student has an appropriate and safe way to participate. By using this tool, educators can create a more inclusive and supportive environment for all.

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174. (D) A guaranteed longer lifespan.
Maintaining wellness provides numerous and significant benefits across every dimension of a person's life, including increased energy levels, improved mood, and enhanced social relationships. By making conscious lifestyle choices, individuals can dramatically improve their quality of life and reduce their risk of many chronic diseases. However, it is important to recognize that while wellness can lead to a healthier and more fulfilling existence, it cannot provide a absolute guarantee of a longer lifespan. Genetics and environmental factors also play a role, but a proactive approach to well-being remains essential for achieving one's full potential.

175. (A) P-4, Q-1, R-2, S-3.
International sports are governed by specialized bodies that set the rules and manage championships for their respective disciplines. FIFA is the global authority for football, while FIBA oversees basketball. FINA (now known as World Aquatics) is responsible for swimming and other aquatic sports, and World Athletics manages track and field events. Recognizing these organizations and the sports they govern is essential for understanding the international sports landscape. Each body ensures that its sport is played according to consistent and fair standards across all member nations, promoting global competition and excellence.

176. (B) Teach individuals societal roles and values.
"Sports as a socializing agency" refers to the powerful role that physical activity plays in helping individuals learn and internalize the norms, values, and roles of their society. Through participation in sports, people learn essential social skills such as teamwork, cooperation, and respect for authority. They also experience the practical application of ethical concepts like fair play and discipline. This process helps individuals to become more effectively integrated into their communities and to develop the qualities needed to be responsible and productive members of society. Sports provide a unique laboratory for learning life's social lessons.

177. (B) A culture that supports outdoor sports and an active lifestyle.
The development of physical education and sports in Australia is deeply rooted in a national culture that places a high value on the outdoors and an active way of life. This cultural emphasis is reflected in the nation's school physical education programs, which often prioritize a wide range of outdoor and team-based activities. Australia's favorable climate and vast natural spaces have fostered a society where participation in sports is common and highly regarded. This widespread cultural support has contributed to Australia's consistent success on the international sporting stage and its reputation as a sports-loving nation.

178. (A) A rise in lifestyle-related chronic diseases like obesity and type-2 diabetes.
The widespread shift toward more sedentary lifestyles in modern society has had a profound and negative impact on public health. As individuals spend more time sitting at work and engaging in digital leisure activities, their physical activity levels have declined significantly. This lack of regular movement is a primary cause of the dramatic rise in chronic conditions such as obesity and type-2 diabetes. These lifestyle-related diseases have become a major global health challenge, highlighting the urgent need for individuals to re-incorporate regular physical activity and healthy habits into their daily routines to improve overall well-being.

179. (A) Both Statement I and Statement II are true.
The inaugural Asian Games, held in New Delhi in 1951, were a landmark event for continental unity and sporting excellence. The initial idea for these games was proposed by the Indian sports enthusiast G.D. Sondhi, who envisioned a multi-sport competition that would foster friendship and cooperation among Asian nations in the post-World War II era. With the support of leaders like Jawaharlal Nehru, this vision became a reality. The success of the first games established a prestigious tradition that continues to bring athletes from all over Asia together every four years for high-level competition and cultural exchange.

180. (D) Chosen voluntarily for the enjoyment and satisfaction it brings.
The fundamental principle of recreation is its voluntary nature, occurring during an individual's leisure time when they are free from work and other obligations. People choose to participate in recreational activities primarily because they find them enjoyable and satisfying, rather than for external rewards or out of compulsion. This element of choice is what distinguishes recreation from work or chores. Whether it is a quiet hobby or an active sport, the restorative power of recreation lies in the personal joy and refreshment that individuals find when they engage in activities they truly love.

181. (B) James Naismith.
James Naismith, a Canadian physical education instructor, invented the game of basketball in 1891 at Springfield College in Massachusetts. He sought to create a less physically strenuous indoor game that would keep students active during the cold winter months. Naismith's original version of the game used peach baskets as goals and a soccer ball, with a set of thirteen basic rules. From these humble beginnings, basketball has evolved into one of the most popular and dynamic team sports in the world, a testament to Naismith's creativity and his understanding of the value of physical activity.

182. (C) 1, 2, and 3 only.
Teaching is a complex and interactive process that aims to facilitate learning and bring about desired changes in the behavior and conduct of students. It is considered both an art and a science, requiring a combination of creative instructional strategies and a systematic approach to planning and evaluation. Effective teaching is goal-oriented and must be flexible enough to adapt to the unique needs and backgrounds of all learners. Rather than being rigid, successful educators use a variety of methods to create a supportive environment where every student can achieve their full potential and acquire new knowledge.

183. (D) Honour the goddess Athena, the patron of the city.
The Panathenaic Games were a major religious festival and athletic competition held every four years in ancient Athens. While the games

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included a variety of sporting events similar to the Olympics, their primary purpose was to honor the goddess Athena, the patron and protector of the city-state. The festival was a central part of Athenian civic and religious life, featuring a grand procession to the Parthenon. By combining athletic competition with religious devotion, the Panathenaic Games served to reinforce communal identity and celebrate the shared cultural and spiritual heritage of the Athenian people.

184. (A) Both A and R are true and R is the correct explanation of A.
Wellness is defined as an ongoing and active process where individuals make conscious choices to improve their overall quality of life across multiple dimensions. It is not a static state that, once reached, requires no further effort; rather, it demands a continuous commitment to healthy habits regarding diet, physical activity, and stress management. By taking personal responsibility for their well-being, individuals can adapt to the changing challenges of life and work toward their full potential. This proactive approach is essential for achieving optimal health and resilience in an increasingly complex and demanding world.

185. (C) Objective, measurable data, such as fitness scores, skill execution accuracy, and performance statistics.
Realism is a philosophy that emphasizes the importance of objective reality and facts that can be proven through scientific inquiry. In the context of physical education, a realist teacher would prioritize assessment methods that provide clear and measurable data. This means using objective tools like standardized fitness tests and performance statistics to track student progress. By focusing on observable and quantifiable results, the realist ensures that evaluation is based on actual achievement rather than subjective opinions. This data-driven approach allows for a precise understanding of a student's physical capabilities and the effectiveness of the training program.

186. (A) Competition is influenced by societal structures, values, and interactions.
The "social aspects of competition" refers to the way that athletic contests are shaped by the broader societal context in which they take place. Competition does not occur in a vacuum; it is influenced by the values, norms, and power structures of a society. This includes the impact of cultural beliefs about gender and race, the influence of commercial interests, and the social interactions between athletes, coaches, and spectators. Understanding these social dimensions is essential for recognizing how competition can either foster positive social qualities like cooperation and respect or lead to negative outcomes such as exclusion and inequality.

187. (D) Naked or unclothed.
The term "gymnastics" is derived from the ancient Greek word "gymnos," which means "naked" or "unclothed." This reflects the practice in ancient Greece where male athletes trained and competed without clothing in public facilities known as gymnasia. For the Greeks, this was a way to showcase the beauty and development of the human body and to demonstrate their physical prowess. While the modern sport of gymnastics involves specialized attire and equipment, its name remains a powerful linguistic link to its ancient roots and the high value that Greek society placed on physical training and aesthetics.

188. (B) Rashtriya Khel Protsahan Puruskar.
The Rashtriya Khel Protsahan Puruskar is a prestigious Indian sports award specifically designed to recognize and encourage the promotion of sports by non-athletes. It is conferred upon corporate entities and individuals who have played a visible and significant role in developing sports infrastructure, sponsoring athletes, or providing opportunities for sports at the grassroots level. This award highlights the vital importance of financial and organizational support from the private and public sectors in building a robust national sports culture. By acknowledging these contributors, the government incentivizes further investment in the nation's sporting future and recognizes their role in promoting holistic development.

189. (C) Therapeutic recreation.
Therapeutic recreation involves the use of recreational activities to achieve specific health outcomes and improve the overall well-being of individuals with illnesses or injuries. A program

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of swimming and aquatic exercises designed for injury recovery is a perfect example, as it uses the physical properties of water to provide a safe and effective environment for rehabilitation. These programs are often designed and supervised by professionals to meet the unique needs of each participant. By combining the joy of recreation with targeted physical therapy, therapeutic recreation helps individuals regain their physical capabilities and improve their quality of life.

190. (C) Statement I is true, but Statement II is false.
The Tara Chand Committee was a major post-independence initiative in India established to review and provide recommendations for the improvement of the national educational system, including physical education. The committee's report emphasized the importance of physical education for the holistic development of youth and recommended that it be made a mandatory part of the school curriculum. Far from being a optional or extracurricular activity, the committee viewed physical training as an essential part of the modern educational experience. The work of the Tara Chand Committee laid the groundwork for a more structured and professional approach to the subject across newly independent India.

191. (A) Showcase and promote the Swedish system of gymnastics developed by Per Henrik Ling.
The Lingiad festivals were large-scale international events held in Stockholm, Sweden, to celebrate and showcase the systematic gymnastics programs developed by Per Henrik Ling. These festivals brought together thousands of participants from various nations to perform synchronized gymnastic routines and demonstrate the effectiveness of the Swedish system for promoting health and discipline. The Lingiads served as a powerful tool for spreading Ling's ideas worldwide and for showcasing Sweden as a leader in physical education. These massive demonstrations of physical training highlighted the importance that the Swedish state placed on the health and fitness of its citizenry.

192. (B) Successfully organizing and leading a 10-minute warm-up session for the class.
A competency-based task for a student leader in physical education should focus on their ability to apply leadership skills in a practical and effective way. Successfully organizing and leading a warm-up session is an excellent example, as it requires the student to demonstrate clear communication, organizational skills, and the ability to guide their peers through a structured activity. This task goes beyond simple rote memorization or physical talent, focusing instead on the practical skills needed to take on a leadership role. By completing such tasks, students can develop the confidence and competencies required for effective leadership both in and out of the gymnasium.

193. (A) 1, 2 and 3 only.
The history of physical education in India has been shaped by a combination of traditional practices and modern professional institutions. The YMCA under H.C. Buck and the HVPM were pivotal in the pre-independence era, each contributing a unique focus to the field. Post-independence, the establishment of the Lakshmibai National University represented a significant commitment to developing specialized leadership in the subject. While British sports were popular, the field was never solely focused on them, and committees like the Kunzru committee sought to integrate various traditions. These key developments collectively laid the foundation for the modern physical education system in India.

194. (A) Idealism.
Idealism as a philosophy views the mind and spirit as the primary reality and places a high value on moral values and the pursuit of perfection. In the field of physical education, this approach emphasizes the importance of character development above all else. The goal is not just to produce physically fit individuals, but to cultivate virtuous qualities such as discipline, sportsmanship, and respect for others. The teacher acts as a moral role model, and the curriculum is centered around activities that provide opportunities for students to develop their character and internalize ideal values that will guide their behavior throughout their lives.

195. (C) The rise of Christianity and the perception of the games as a "pagan" festival.
The Ancient Olympic Games, which had been celebrated for over a thousand years, came to an end in 393 AD when they were abolished by the Roman Emperor Theodosius I. This decision

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was primarily driven by the official adoption of Christianity as the state religion and the perception of the games as a "pagan" festival honoring ancient Greek gods. As the Roman Empire became increasingly Christianized, many ancient traditions and festivals were seen as incompatible with the new faith. The abolishment of the games marked the end of a major chapter in sporting history and the beginning of a long period without international athletic competition.

196. (D) Problem-Solving or Guided Discovery.
For advanced athletes who already have a strong grasp of basic skills, the problem-solving or guided discovery method is often the most effective way to introduce complex tactical plays. This student-centered approach encourages athletes to analyze the situation, explore different options, and discover the best strategic solutions on their own or in small groups. By engaging in this cognitive process, they develop a deeper understanding of the tactics and are better able to adapt their play to the dynamic and unpredictable nature of actual competition. This method fosters critical thinking and decision-making skills that are essential for high-level athletic performance.

197. (B) P-2, Q-4, R-1, S-3.
Different educational philosophies provide diverse and valuable frameworks for the delivery of physical education. Pragmatism focuses on experiential learning and problem-solving through practical activities. Idealism emphasizes the importance of the teacher as a moral role model and the development of character and spirit. Realism grounds physical training in scientific principles and objective reality, using measurable data to track progress. Naturalism suggests that education should follow the natural laws of human development and occur in a natural setting. Understanding these varied perspectives allows physical educators to choose the most appropriate approach for their students and their specific learning goals.

198. (B) Mediates a conflict between two teammates, fostering team cohesion.
Leadership in sport carries a significant social responsibility that goes beyond on-field tactics or individual performance. A team captain demonstrates true leadership when they mediate a conflict between teammates and work to foster a positive and cohesive group environment. By using effective communication and interpersonal skills to resolve disputes, the leader ensures that the team remains focused on its common goals and that every member feels valued. This social aspect of leadership is crucial for maintaining team morale and for ensuring that the sporting experience contributes to the social and personal growth of all participants.

199. (D) His book 'Gymnastics for the Young', which provided a systematic framework for school gymnastics.
Johann Christoph Friedrich GutsMuths made a monumental contribution to physical education through his influential book, 'Gymnastics for the Young.' This work provided the first systematic and comprehensive framework for introducing physical training into the school curriculum. GutsMuths argued that physical education was essential for the overall health and moral development of children and provided detailed instructions for a variety of exercises. His ideas were revolutionary for their time and served as a major inspiration for later pioneers in Germany and across Europe. GutsMuths' work laid the foundation for the structured physical education programs that exist in modern schools.

200. (A) Faster, Higher, Stronger.
The Olympic motto, "Citius, Altius, Fortius," is a powerful symbol of the core aspirations of the Olympic Movement. These Latin words translate to "Faster, Higher, Stronger," and serve to inspire athletes to strive for personal excellence and to push the boundaries of human potential in every competition. The motto was originally proposed by Pierre de Coubertin, who believed that the pursuit of excellence was more important than winning itself. By focusing on constant self-improvement and the endeavor for perfection, the motto encapsulates the enduring spirit of the games and the fundamental values that define the world's most prestigious sporting event.

201. (C) Relies solely on medication to manage health.
A person with high levels of wellness is characterized by a proactive and holistic approach to their health, rather than a passive reliance on medication. They actively engage in health-promoting behaviors such as regular

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exercise, a balanced diet, and effective stress management. This involves a commitment to making conscious, positive lifestyle choices and a positive outlook on life. While medication may be necessary in some cases, a wellness-oriented individual focuses on building their physical and mental resilience and preventing illness through a healthy lifestyle. This active and multi-dimensional approach is fundamental to achieving and maintaining optimal well-being.

202. (A) Both A and R are true and R is the correct explanation of A.
The 'Akhara' system is a deeply rooted and traditional form of indigenous physical culture in India. These training centers have historically served as the primary locations for practicing traditional wrestling and other martial arts. Training in an Akhara involves not just physical exercise, but also a commitment to a spiritual and disciplined lifestyle guided by a code of conduct. The focus on strength, discipline, and respect for traditions makes the Akhara a powerful symbol of Indian physical heritage. By continuing to practice these traditional forms of training, communities preserve a vital link to their cultural past while promoting physical health and personal growth.

203. (D) Fun, participation, and the development of fundamental motor skills.
For young children, recreational programs should prioritize a fun and inclusive environment that encourages widespread participation rather than intense competition. The primary objective should be the development of fundamental motor skills, such as running, jumping, throwing, and catching, through play and discovery. By focusing on these core skills in a supportive setting, physical educators can help children build the physical competence and confidence needed for a lifelong commitment to an active lifestyle. Avoiding rigid rules and specialization at an early age ensures that children develop a positive attitude toward physical activity and learn to enjoy the intrinsic benefits of movement.

204. (B) Major Dhyan Chand Award.
The Major Dhyan Chand Award is India's highest national honor for lifetime achievement in sports and games, named in memory of the legendary hockey wizard. It is conferred upon individuals who have contributed to the promotion of sports in their individual capacity during their active career and after retirement. This prestigious award recognizes a long-term commitment to the athletic community and serves to honor those who have dedicated their lives to the advancement of sports in India. It highlights the importance of sustained contribution and the lasting impact that exceptional athletes and administrators can have on the nation's sporting heritage.

205. (C) The wholesome development of an individual.
The ultimate aim of physical education is to foster the wholesome development of the individual across all dimensions of their being—physical, mental, social, and emotional. It goes beyond the mere acquisition of motor skills or the pursuit of elite athletic performance. Instead, physical education aims to equip every individual with the knowledge, attitudes, and skills needed to lead a healthy, productive, and fulfilling life. By promoting a positive self-concept and the ability to function effectively in a social environment, the subject contributes to the production of well-rounded citizens who are prepared to meet the various challenges of a dynamic and changing world.

206. (C) Statement I is true, but Statement II is false.
Existentialism is an educational philosophy that emphasizes individual freedom, personal choice, and the responsibility of the learner to create their own meaning. In physical education, this approach prioritizes student autonomy and encourages individuals to find personal relevance in a variety of physical activities. Consequently, a rigid and uniform curriculum would be entirely contrary to existentialist principles, as it would deny students the opportunity to exercise their freedom and make their own choices. An existentialist teacher acts as a facilitator who helps students explore their physical capabilities and discover what movement means to them in their own lives.

207. (A) Mountaineering.
Indoor recreational programs are characterized by activities that can be performed within a building and are not dependent on specific natural outdoor environments. Games like table tennis, chess, and carrom are perfect examples, as they require limited space and can be enjoyed

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year-round regardless of the weather. In contrast, mountaineering is a quintessential outdoor adventure activity that requires a specific natural setting—the mountains—and involves physical challenges and risks that cannot be replicated in an indoor environment. Understanding this distinction is essential for communities to provide a diverse range of recreational opportunities that meet the varied interests and needs of their residents.

208. (B) Govern and promote athletics at all levels within India.
National Sports Federations are the primary governing bodies for individual sports within a country. In India, the Athletics Federation of India is responsible for the overall governance, promotion, and development of track and field athletics across the nation. Its functions include setting rules, organizing national championships, and selecting the national team for international competitions. By managing the development of the sport from the grassroots to the elite level, the AFI ensures a structured and professional environment for athletes and officials. While it works with other national sports organizations, its core focus remains dedicated to the growth and integrity of athletics throughout the country.

209. (A) 1, 3, 4, 2.
The history of physical education is marked by the emergence of key schools and movements that have shaped modern practices. It began with Basedow founding the Philanthropinum in Germany in 1774, followed by GutsMuths publishing his influential book in 1793. In the early nineteenth century, Friedrich Jahn started the patriotic Turnverein movement. Much later, in 1920, the YMCA College was established in Madras, bringing formal teacher training to India. Following this chronological sequence allows us to trace the evolution of systematic physical education from its European roots to its institutionalization in various parts of the world, including the Indian subcontinent.

210. (A) Cooperation, communication, and a sense of belonging.
Participation in team sports provides numerous opportunities for individuals to develop essential social skills and to experience the benefits of collective effort. To be successful, team members must cooperate toward a common goal and communicate effectively on the field. This constant interaction fosters a strong sense of belonging and unity among the players. Through these social experiences, individuals learn the value of working together and to respect the diverse contributions of their teammates. These social benefits extend far beyond the playing field, helping individuals to become more effective and responsible members of their broader community and society.

211. (C) Social Wellness.
Social wellness is a critical dimension of overall well-being that relates to an individual's ability to build and maintain healthy relationships and interact effectively with their community. It involves having strong communication skills, showing respect for others, and having a sense of belonging within social groups. Achieving social wellness requires individuals to actively participate in social life and to contribute to the well-being of others. By fostering these social connections, individuals can build a supportive network that enhances their emotional resilience and improves their overall quality of life. This dimension is essential for leading a balanced and fulfilling life in a social world.

212. (D) The management strategies for instruction.
In the context of teaching, a "teaching method" refers to the specific instructional and management strategies that an educator uses to facilitate learning and achieve specific educational goals. This includes the way that information is presented, the structure of activities, and the level of student involvement. Choosing the most appropriate method is essential for effective instruction and requires the teacher to consider the diverse needs of the learners and the nature of the task. By using a variety of teaching methods, physical educators can create a more dynamic and inclusive learning environment that fosters skill acquisition and enjoyment for every student in the class.

213. (C) 1, 3, and 5.
The Commonwealth Games are a major multi-sport event held every four years among member nations of the Commonwealth. They are uniquely known as the "Friendly Games" because they prioritize the shared history and

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cultural ties of the participating countries. While the competition is high, the focus remains on fostering a spirit of goodwill and equality among the diverse member nations. It is important to note that participation is not open to all countries of the world, but only to those that are members of the Commonwealth organization. The first games were actually held in Hamilton, Canada, marking a significant milestone in international sporting history.

214. (B) Providing food and spectacles to pacify the masses.
During the later stages of the Roman Empire, the concept of physical education declined significantly, being replaced by a state policy known as 'bread and circuses.' This involved the government providing the population with free grain and elaborate public spectacles, such as gladiatorial combat and chariot races, to keep them pacified and to distract them from social and political problems. Physical activity in this era was focused on entertainment for the masses rather than the holistic development of the individual. The 'bread and circuses' policy remains a powerful historical example of the use of public spectacles for political control and social manipulation.

215. (D) Voluntarily chosen.
The most significant and defining characteristic of recreation is its voluntary nature. It refers to activities that an individual chooses to participate in during their leisure time, when they are free from work, chores, and other obligations. People engage in recreation primarily because they find the activity intrinsically enjoyable and satisfying, rather than for external rewards or out of compulsion. This element of free choice is what makes recreation a restorative and fulfilling experience. Whether it is a quiet hobby or an active team sport, the power of recreation lies in the personal joy and refreshment that individuals find when they follow their own interests.

216. (A) Both Statement I and Statement II are true.
The Indian sporting landscape is managed by several key organizations, each with a distinct and vital role. The Sports Authority of India is the premier national body responsible for the broad promotion and development of sports, including managing infrastructure and national training schemes. Conversely, the Indian Olympic Association is the specific body recognized by the International Olympic Committee. Its primary function is to select and manage the national delegation for the Olympic Games and other major multi-sport events. Both organizations work toward the advancement of Indian athletics, but their specific responsibilities—development versus international representation—complement each other within the overall sports ecosystem.

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217. (C) Realism.
Realism is an educational philosophy that emphasizes the importance of objective reality and scientific inquiry. A physical education teacher who believes in Realism would design a curriculum grounded in the established truths of the human body, such as the principles of anatomy, physiology, and biomechanics. This approach prioritizes evidence-based training methods and uses measurable data to track student progress and ensure the effectiveness and safety of the program. By focusing on scientific facts over abstract ideals or personal opinions, the realist ensures that physical education is a rigorous and effective discipline that achieves consistent and verifiable results for all students.

218. (A) Pierre de Coubertin.
The revival of the Modern Olympic Games in 1896 was the result of the tireless efforts and vision of a French educator named Pierre de Coubertin. Driven by a belief in the educational value of sport and a desire to promote international peace, Coubertin worked to establish a permanent global athletic movement. His work led to the first Modern Olympics in Athens and the creation of the International Olympic Committee. Coubertin's legacy lives on through the continued celebration of the games and their enduring commitment to the values of Olympism, making him one of the most influential figures in modern sporting history.

219. (A) Both A and R are true and R is the correct explanation of A.
Team sports are more than just a means of physical exercise; they serve as a powerful platform for developing essential social skills. To be successful, players must work together toward a common goal, which requires them to look past individual

differences and build mutual respect. This environment necessitates clear communication, cooperation, and the ability to resolve conflicts effectively. The shared experience of competition and teamwork fosters a sense of unity and shared responsibility. By developing these social competencies, athletes become better equipped to handle the complexities of social interaction and contribute positively to their broader community and society at large.

220. (B) Dronacharya Award.
The Dronacharya Award is India's highest national honor for sports coaching, named after the legendary guru from the Indian epic, the Mahabharata. It is conferred upon coaches who have demonstrated exceptional dedication and success in training athletes to achieve international medals on a consistent basis. The award recognizes the crucial role that instructors and mentors play in the success of athletes and serves to honor those who have dedicated their lives to the advancement of their specialized discipline. By acknowledging the vital work of coaches, the government highlights the importance of professional instruction and mentorship in the development of a strong national sporting culture.

221. (C) The growth of virtual reality (VR) based fitness games.
A significant modern trend in recreation is the increasing integration of technology into leisure activities, as seen in the growth of virtual reality-based fitness games. These innovative pursuits combine physical activity with a digital gaming experience, providing a new and engaging way for individuals to stay active and healthy. As technology becomes more accessible, these tech-based forms of recreation have grown in popularity, offering diverse opportunities for individuals to customize their workouts and enjoy a unique gaming experience. This trend highlights the evolving nature of recreation and the increasing importance of technology in creating accessible and exciting opportunities for physical and social engagement in the modern world.

222. (D) Ensure students with disabilities participate meaningfully.
The primary and essential goal of adapted physical education is to ensure that students with disabilities have the opportunity to participate meaningfully and safely in physical activities alongside their peers. This involves modifying games, equipment, and teaching strategies to meet the unique needs and capabilities of each individual. Rather than segregating these students, adapted physical education focuses on creating an inclusive environment that fosters success and personal growth for everyone. By providing the necessary support and modifications, educators can ensure that every student, regardless of their challenges, can enjoy the many benefits of physical activity and improve their overall health and well-being.

223. (B) P-4, Q-3, R-2, S-1.
The history of physical education is a diverse tapestry woven by the contributions of visionary pioneers from different nations. Pierre de Coubertin is the father of the Modern Olympics, while H.C. Buck modernised the field in India through the YMCA. Friedrich Jahn established the patriotic Turnverein movement in Germany, and Per Henrik Ling developed the scientific Swedish system of gymnastics. Recognizing these individuals and their unique contributions is essential for understanding the historical development of the structured physical education programs that exist around the world today. Each pioneer provided a foundational approach that continues to influence modern practices in the field of physical training and well-being.

224. (B) The teacher's salary and benefits.
In the context of teaching, "learner characteristics" refer to the wide range of individual traits and backgrounds that students bring to the educational environment. This includes their prior knowledge and experience, their motivation and attitude toward learning, and their cognitive and physical abilities. Each of these factors can significantly influence how a student perceives information and acquires new skills. For an educator, understanding these diverse characteristics is essential for designing effective and inclusive lessons. In contrast, the teacher's salary and benefits are external

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administrative factors that do not relate to the internal traits or potential for learning of the students in the class.

225. (B) Helps to connect present generations with their history and traditions.
Viewing sports as cultural heritage is important because it allows communities to maintain a vital link to their history and traditional values. Indigenous games and physical activities are more than just sports; they carry the stories, beliefs, and cultural identity of previous generations. By continuing to practice and celebrate these traditional activities, societies ensure that their unique cultural legacy is preserved and passed on to the future. This appreciation for heritage helps to connect present generations with their roots and fosters a deeper understanding of the diverse athletic traditions that have shaped the world over many centuries.

226. (A) The ideals of purity, the endeavor for perfection, and the link between ancient and modern games.
The Olympic flame is one of the most powerful and enduring symbols of the Olympic Movement. It is lit in Olympia, Greece, using the sun's rays, symbolizing the sacred link between the ancient and modern games. The flame represents the ideals of purity, the constant endeavor for perfection, and the noble spirit of athletic competition. The relay that carries the flame to the host city serves to spread the message of friendship, solidarity, and peace among all nations. This inspiring symbol remains a central feature of every Olympic Games, reminding participants and spectators alike of the movement's fundamental values and ancient roots.

227. (C) "Ready for Labour and Defence" (GTO).
During the Soviet era, Russia developed a highly centralized and state-driven physical education system with the goal of ensuring national fitness and discipline. A key feature of this mass-based approach was the "Gotov k Trudu i Oborone" or "Ready for Labour and Defence" program, which set specific physical standards for various age groups across the country. The government viewed sporting success and national fitness as a way to demonstrate the strength and superiority of the socialist state. This systematic approach aimed to ensure that the entire population remained physically fit and prepared for the challenges of both national defense and modern industrial labor.

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228. (D) It is done for personal enjoyment and satisfaction.
A primary and defining characteristic of recreation is that it is an activity performed for the intrinsic joy and personal satisfaction it provides. It occurs during an individual's leisure time, when they are free from work and other obligations, and is chosen voluntarily rather than out of compulsion or for external rewards. Whether it is a quiet hobby or an active sport, the power of recreation lies in the restorative and fulfilling experience it offers to the participant. This element of free choice and personal enjoyment is what distinguishes true recreation from work or chores and makes it an essential part of a healthy life.

229. (B) 1, 2, and 3 only.
The history of physical education in Germany is characterized by the emergence of influential pioneers and systematic approaches to physical training. GutsMuths is widely considered the "grandfather" of German gymnastics, while Friedrich Jahn, the "father" of the movement, used it to promote national strength and patriotic pride through the Turnverein. The Turnplatz was an outdoor exercise area where young men practiced a variety of activities on specialized apparatus. While gymnastics was a central feature, the German system also included games and sports, recognizing the value of a balanced approach to physical training for the health and unity of the German people.

230. (B) Emotional.
Emotional wellness is a critical dimension of overall well-being that relates to an individual's ability to cope with the stresses of life, manage their feelings effectively, and maintain a positive self-concept. It involves having the resilience to handle both successes and failures and to respond to challenges with maturity and self-regulation. Achieving emotional wellness requires individuals to be self-aware and to have healthy ways of expressing and managing their emotions. This dimension is essential for maintaining mental health and for building strong and meaningful relationships with others,

contributing to a more balanced and fulfilling life in a complex and demanding world.

231. (D) International Olympic Committee (IOC).
The Indian Olympic Association is the national organization recognized by the International Olympic Committee as the official representative of the Olympic Movement in India. The IOA is affiliated with the IOC and must adhere to its fundamental principles and the Olympic Charter. Its primary responsibility is to select and manage the national delegation for the Olympic Games and other major multi-sport events regulated by the IOC. By maintaining this international affiliation, the IOA ensures that India remains an active and respected participant in the global sporting community and that the values of friendship and solidarity are promoted throughout the nation's athletics.

232. (C) Statement I is false, but Statement II is true.
Leadership is not just an innate quality that some people are born with; it is a complex set of skills that can be developed and refined through experience and deliberate practice. Sports provide an exceptional and practical platform for individuals to take on leadership roles, such as team captain or coach, where they can practice communication, decision-making, and motivation. By working toward a common goal and resolving conflicts within a group, individuals learn how to guide and inspire others effectively. These social competencies are valuable not only in sports but in all areas of social and professional life, contributing to personal growth and success.

233. (A) The teacher setting up a problem (e.g., "How can we get the ball over the net?") and having students experiment to find a solution.
Pragmatism is an educational philosophy that emphasizes learning through experience and the practical application of ideas. A pragmatist teacher would avoid rigid lectures in favor of creating problem-solving situations where students are active participants. By having students experiment and discover their own solutions to physical challenges, the teacher fosters critical thinking and a deeper understanding of the subject matter. This student-centered approach prioritizes the process of inquiry and adaptation, allowing learners to test their ideas in real time and learn from the results. This focus on experiential learning is fundamental to the pragmatist philosophy and its emphasis on practical knowledge and growth.

234. (A) Olympic Council of Asia (OCA).
The Asian Games are a prestigious multi-sport event that brings together athletes from all over the continent every four years. They are regulated and overseen by the Olympic Council of Asia, which is the governing body for sports in Asia recognized by the International Olympic Committee. The OCA ensures that the games are organized according to high standards and that they promote the fundamental values of friendship, cooperation, and sporting excellence among all Asian nations. By providing a structured framework for continental competition, the OCA plays a vital role in maintaining the prestige and integrity of the most significant sporting event on the Asian continent.

235. (A) Both A and R are true and R is the correct explanation of A.
Recreation serves a vital and restorative function by providing an outlet for pent-up emotions and a way for individuals to disconnect from the pressures of work and daily responsibilities. This cathartic experience contributes significantly to improved mental health and overall well-being. By engaging in enjoyable activities during their leisure time, people can reduce their stress levels and rejuvenate both their minds and bodies. The sense of refreshment and accomplishment gained from recreation helps to build emotional resilience and fosters a more positive outlook on life, which is essential for maintaining health and productivity in the long term.

236. (B) Organic development.
Organic development is a primary objective of physical education that focuses on the efficient functioning and improvement of the body's internal systems, particularly the circulatory and respiratory systems. Through regular and appropriate physical activity, individuals can enhance their cardiovascular endurance, lung capacity, and overall physical vigor. These physiological attributes are essential for maintaining health and for performing daily tasks with energy and resilience. By prioritizing organic development, physical education provides the foundational physical health that

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is necessary for achieving success in specialized athletic skills and for leading a long, active, and healthy life in the community.

237. (C) Wrestling.
The Pentathlon was one of the most prestigious and challenging events in the Ancient Olympic Games, designed to identify the ultimate all-around athlete. It consisted of five distinct disciplines that required a diverse range of physical abilities: the discus throw, the javelin throw, the long jump, the stadium race, and wrestling. This unique combination of events tested an athlete's strength, speed, agility, and skill in both combat and field athletics. The inclusion of wrestling as the final event highlighted the ancient Greeks' high regard for physical prowess and their focus on producing well-rounded citizens who were prepared for the rigors of both competition and warfare.

238. (D) Existentialism.
Existentialism is a philosophy that emphasizes individual freedom, subjectivity, and the responsibility to create one's own meaning through choices. A physical education teacher who applies these principles would avoid a rigid and uniform curriculum, instead providing students with choices in activities and encouraging them to find personal relevance in movement. The teacher acts as a facilitator who helps students explore their physical capabilities and discover what physical activity means to them. This student-centered approach prioritizes personal agency and self-awareness, making the educational experience deeply individual and fostering a more meaningful and lasting commitment to a healthy and active lifestyle throughout their lives.

239. (A) Major Dhyan Chand Khel Ratna Award.
The Major Dhyan Chand Khel Ratna Award is India's most prestigious national honor for outstanding achievement in the field of sports and games. It is conferred upon the sportsperson who has demonstrated the most spectacular and consistent performance at the international level over the preceding four-year period. This award recognizes the peak of sporting excellence and serves as a major inspiration for all Indian athletes to strive for success on the world stage. It highlights the immense dedication, skill, and discipline required to compete and win at the highest levels of global sport and honors the hockey legend whose name it carries.

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240. (B) Cognitive abilities and decision-making skills.
The problem-solving teaching method in physical education is a student-centered approach that focuses on developing a learner's cognitive abilities and decision-making skills. Rather than providing direct answers, the teacher presents physical challenges or tactical problems that require students to analyze the situation and discover their own solutions. By engaging in this mental process, students develop a deeper understanding of the principles behind movement and strategy and improve their ability to adapt to changing situations during competition. This method fosters critical thinking and independent learning, helping students to become more effective and responsible participants in a wide variety of physical activities throughout their entire lives.

241. (B) A corporate wellness retreat, a summer camp for children, and a senior citizens' walking group.
Recreational programs are most effective when they are designed to meet the unique physical, social, and psychological needs of various categories of people. Examples of such diverse programming include wellness retreats for corporate employees to reduce stress, summer camps for children to develop motor skills and social bonds, and walking groups for senior citizens to maintain mobility and social connection. By providing activities that are appropriate for different age groups and lifestyles, physical educators can ensure that everyone in the community has an opportunity to enjoy the benefits of recreation. This inclusive approach promotes widespread well-being and fosters a healthy and active lifestyle for all.

242. (A) A state-driven pursuit of international prestige.
The development of physical education and sports in China over the past few decades has been primarily characterized by a highly structured and state-driven pursuit of international prestige. The government invests heavily in specialized sports schools and scientific training methods to identify and develop elite talent from a very young age. This focused approach has led

to China becoming a dominant force in the Olympic Games and other world championships. The system reflects the nation's use of sporting success as a powerful way to demonstrate national strength and to enhance its global standing and pride through the medium of high-performance international athletic competition.

243. (C) 1, 2, and 3 only.
Teaching is a multifaceted process that aims to facilitate meaningful learning and bring about desirable changes in the behavior, conduct, and character of students. The fundamental objectives of instruction are to impart knowledge, develop practical skills, and shape the attitudes and values that will guide learners throughout their lives. Effective teaching encourages critical thinking and independent inquiry, rather than discouraging it. By creating a supportive and goal-oriented environment, educators can help students acquire the competencies they need to become responsible and productive members of society. This comprehensive approach ensures that the educational experience contributes to the holistic development of every individual student.

244. (D) Winning at any cost, including cheating.
Sportsmanship is a fundamental social value in athletics that involves an ethical and respectful approach to competition. It includes playing fair and by the established rules, respecting opponents and officials, and showing grace in both victory and defeat. A true sportsman understands that winning is a goal, but it should never come at the expense of honesty or respect for others. The idea of "winning at any cost" is the complete opposite of sportsmanship and undermines the ethical foundations of sport. Promoting sportsmanship helps to build character and ensures that competitive physical activity remains a positive and respectful influence on individuals and society.

245. (C) Sweden.
Per Henrik Ling was a pioneering figure in the history of physical education in Sweden during the early nineteenth century. He established the Royal Central Institute of Gymnastics in Stockholm, where he developed a systematic program of physical training based on scientific principles of anatomy and physiology. Ling's system was uniquely divided into four categories: pedagogical, medical, military, and aesthetic, each with its own specific purpose for the health and strength of the individual and the nation. His work had a major impact on the development of physical education across Europe and established Sweden as a leader in the field of systematic and scientific physical training.

246. (C) Statement I is false, but Statement II is true.
Wellness is a proactive and multi-dimensional process that goes far beyond simply visiting a doctor; it is a dynamic and lifelong journey toward achieving optimal well-being. It requires individuals to make conscious daily choices and take personal responsibility for their lifestyle habits regarding diet, physical activity, and mental health. This holistic approach recognizes that all dimensions of a person's life—physical, mental, and social—are interconnected and essential for health. Understanding that wellness is an active process allows individuals to build resilience and strive toward their full potential, leading to a more balanced and fulfilling life in a complex and demanding world.

247. (D) Social values.
The "Muscular Christianity" movement in nineteenth-century England is a classic historical example of the deep link between sports and social values. Proponents of this philosophy argued that physical fitness and sportsmanship were essential for the development of virtuous character and moral "manliness." They believed that a strong and active body was a necessary foundation for a strong and active spirit. This movement had a significant and lasting impact on the development of physical education and sports in schools, as it promoted the idea that competitive games were a powerful way to instill important ethical and social values in the youth.

248. (A) Establish and enforce the international rules and standards for that specific sport.
International governing bodies, such as FIFA for football or FIBA for basketball, are essential for maintaining the global integrity and consistency of their respective sports. Their primary role is to establish and enforce the international rules and standards that ensure the sport is played fairly and consistently across all member nations. These organizations also oversee the development of the sport at a global level and organize major

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international championships. By providing a clear and structured framework for international competition, they allow for a professional and exciting athletic landscape where nations can compete together on a level playing field according to a single set of recognized rules.

249. (C) Ability to demonstrate skills correctly.
For a physical education teacher, the ability to correctly and effectively demonstrate movements and skills is a vital part of their teaching aptitude. Physical learning relies heavily on visual observation, and the teacher must be able to model the proper technique so that students can understand and imitate it. This competency goes beyond theoretical knowledge, as it requires the teacher to physically show the mechanics of an activity. By providing clear and accurate demonstrations, the instructor ensures that students can acquire new skills safely and effectively. This practical ability is essential for creating a successful and inclusive learning environment in the gymnasium or on the field.

250. (A) Wholesome development of the individual's personality.
The ultimate and most important aim of physical education, encompassing all its specific objectives, is the wholesome development of the individual's personality through the medium of physical activity. This holistic goal includes physical fitness, mental alertness, social adjustment, and emotional stability. By integrating these various dimensions, physical education prepares individuals to lead healthy, productive, and fulfilling lives. It is a lifelong process that goes beyond the classroom, ensuring that every person has the physical, mental, and social tools they need to achieve their full potential and to contribute positively to their community and society as a whole.

251. (B) Pragmatism, as it values experience and problem-solving.
This educational philosophy focuses on experimentalism and the discovery of truth through practical experience. It prioritizes student-centered learning where activities are made relevant to the learner's life and environment. Consequently, it encourages problem-solving and social interaction by allowing students to modify games and participate in activities that hold personal meaning and real-world applicability for their own lives.

252. (A) Realism
Realism emphasizes that reality exists independently of the mind and focuses on the objective world of matter. In physical education, this approach relies on scientific principles, including physics and biology, to guide instruction. It prioritizes measurable outcomes and biomechanical efficiency, utilizing structured, evidence-based programs to track and improve physical fitness through observable and quantifiable data collected during the lessons.

253. (C) Idealism emphasizes moral and character development while Realism emphasizes scientific principles and measurable results.
Idealism views reality as fundamentally mental or spiritual, placing significant emphasis on character development and the pursuit of perfection through role modeling. In contrast, Realism focuses on the material world and objective truths. While Idealism prioritizes moral and self-development, Realism focuses on scientific laws, biomechanical efficiency, and the attainment of measurable physical fitness results within a structured program.

254. (D) An unstructured session of free play and exploration in a park.
This philosophy advocates for educational practices that align with natural human development processes. It prioritizes innate tendencies and individual readiness over rigid, prescribed curricula. Representative activities include those that emphasize play and natural movements within outdoor environments. Such an approach values unstructured exploration, allowing learners to engage with their surroundings in a way that respects their spontaneous developmental needs.

255. (C) Idealism
This philosophical perspective posits that reality is mental and spiritual rather than material. Within physical education, it views the instructor as a critical role model who guides students toward perfection in character and performance. The focus is on developing the self and moral values, using physical activity as a medium to

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cultivate personality and reach high spiritual and mental standards.

256. (B) To produce physically superior and disciplined soldiers.
Spartan physical education was characterized by its strictly utilitarian and militaristic objectives. The primary goal was to develop dominant and unconditionally obedient soldiers for the state. This involved subjecting both boys and girls to a rigorous and often brutal training regimen from an early age, ensuring they possessed the physical strength and discipline required for successful and effective military service.

257. (D) Romans valued physical education for military and entertainment purposes, unlike the Athenian focus on well-rounded citizenship.
While the Athenians pursued a harmonious balance between physical and intellectual development to create well-rounded citizens, the Romans adapted training for pragmatic ambitions. Their approach prioritized military superiority and public entertainment. Rather than seeking aesthetic harmony, the Roman system focused on developing combat skills for soldiers and conditioning performers for gladiatorial contests and large-scale public spectacles for the masses.

258. (A) Athletic training and philosophical discussion.
In Athens, the gymnasium was more than just a place for physical training. It functioned as a central hub for the holistic development of citizens, integrating athletic training with philosophical discourse. This dual purpose supported the cultural ideal of producing individuals who were both men of action and men of wisdom, fostering a balance between physical and intellectual excellence.

259. (C) It represented a standard of excellence encompassing both physical and intellectual qualities.
In the context of ancient Greek culture, particularly in Athens, this concept represented the pursuit of excellence. It was not restricted to physical prowess or athletic victory alone; rather, it encompassed a holistic standard of development. This ideal sought a harmonious balance between the physical and the intellectual, aiming to cultivate well-rounded citizens who achieved excellence in all aspects.

260. (A) Public entertainment.
The Roman adaptation of physical training diverged from holistic ideals by focusing on military needs and mass spectacles. Gladiatorial contests and large-scale performances were designed specifically for public entertainment. This shift reflects a pragmatic culture that used physical conditioning to prepare performers for shows that amused the citizenry and demonstrated the power and organizational capacity of the ancient state.

261. (D) The Swedish system of Per Henrik Ling.
Developed by Per Henrik Ling, this approach was highly scientific and systematic. It explicitly categorized physical activity into four distinct branches: pedagogical for schools, medical for therapeutic purposes, military for soldiers, and aesthetic for expression. The system focused on anatomical principles and the precise execution of movements to achieve specific corrective and developmental effects on the entire human body.

262. (B) A strong sense of nationalism and citizen-building.
This system of gymnastics was created during the nineteenth century under the influence of figures like Friedrich Ludwig Jahn. It was heavily driven by nationalistic sentiment and aimed to cultivate strong, patriotic citizens capable of defending Germany. The program utilized fixed apparatus and mass exercises to build the physical strength and unity necessary for national service and military defense.

263. (C) Making physical training compulsory in schools and the military.
As a pivotal figure in Danish history, this individual successfully popularized physical education by systematizing its delivery across the nation. His efforts led to physical training becoming a mandatory requirement within both the school system and the military. By establishing specialized facilities and serving as a national director, he ensured mass participation and established a formal structure for physical training.

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264. (D) The German system was nationalistic, while the Swedish system was more scientific and therapeutic.
The two systems differed primarily in their underlying motivations and methodologies. The German approach was deeply nationalistic, focusing on building patriotic citizens through mass exercises and heavy apparatus. In contrast, the Swedish system was more scientific and therapeutic. It emphasized anatomical principles and corrective movements, aiming for developmental effects through a precisely structured program rather than fostering nationalistic fervor.

265. (A) GutsMuths
The development of Danish physical education was significantly shaped by earlier European models. Franz Nachtegall, who was instrumental in making physical training mandatory in Denmark, was influenced by the German model. Specifically, the methods and philosophies of GutsMuths served as an early inspiration for his work in establishing gymnasiums and systematizing physical activity for schools and the national military.

266. (B) Indigenous activities such as yoga and mallakhamb.
Before the introduction of modern sports, physical culture in India was rooted in indigenous activities that integrated physical movement with spiritual and self-disciplinary practices. These traditions included yoga, mallakhamb, and various martial arts. These activities formed the foundational basis of traditional training, emphasizing the development of the mind and body within the specific social and cultural framework of India.

267. (B) To instill discipline and loyalty among students.
During the colonial era, the British introduced a more structured, drill-based system of physical training into Indian schools. This model was not designed to promote indigenous culture but was primarily aimed at instilling discipline and loyalty among the student population. It reflected European educational models of the period, which used physical training as a tool for character management and control.

268. (A) To serve as a premier institution for training physical education teachers.
Following independence, the Indian government sought to professionalize the field of physical education to support national development. The creation of this premier institution in 1957 was a major milestone in this effort. Its primary purpose was to serve as a specialized center for training high-quality physical education teachers, ensuring the systematic delivery of fitness and sports programs.

269. (C) A synthesis of traditional culture and modern sports science.
After 1947, the national strategy for physical education focused on creating a balanced framework. This approach sought to synthesize traditional Indian physical culture, such as yoga, with modern sports science. The goal was to promote health, character, and sporting excellence by utilizing the strengths of both indigenous practices and contemporary scientific methods to benefit students and athletes nationwide.

270. (D) It plays a key role in professionalizing athlete training and sports management.
This organization was established to enhance the professional standards of sports in India. It plays a critical role in the management of sports infrastructure and the specialized training of athletes. By providing expert coaching and modern facilities, it helps professionalize the sporting landscape, aiming to foster excellence and improve the country's performance in national and international arenas.

271. (C) It must be of a voluntary nature.
A fundamental aspect of recreational activities is that they are undertaken during leisure time and are entirely voluntary. They cannot be made compulsory and must be driven by the participant's intrinsic motivation. This voluntary nature ensures that the individual chooses the activity for personal satisfaction and enrichment, distinguishing it from tasks performed due to obligation, necessity, or gain.

272. (B) contribute to holistic well-being.
The significance of engaging in recreational activities lies in their ability to foster holistic well-being. By providing enjoyment and

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relaxation, these activities promote mental, emotional, physical, and social health. They serve as a constructive outlet for energy and act as a vital counterbalance to the various stresses encountered in modern life, ultimately improving the overall quality of life.

273. (D) Modern trends in recreation.
The field of recreation is constantly evolving to reflect broader societal changes. Contemporary preferences show a growing interest in diverse activities such as adventure sports, eco-tourism, and digital or virtual reality-based leisure. These examples highlight modern trends where people seek new forms of stimulation and engagement during their free time, moving beyond traditional indoor and outdoor team games.

274. (A) To ensure inclusivity by considering diverse needs and interests.
Effective recreational programming requires careful consideration of the diverse needs of different groups. By designing activities specifically for various ages, abilities, and socio-economic backgrounds, providers ensure inclusivity. This approach allows for maximum benefit because the programs are tailored to the specific interests and physical capacities of the participants, such as focusing on social interaction for seniors or adventure.

275. (C) Working overtime at a job to meet a deadline.
Recreation is defined by its voluntary nature and the enjoyment it provides during leisure time. In contrast, activities performed out of obligation, necessity, or for financial gain do not meet these criteria. Working overtime to meet a professional deadline represents an obligation rather than a chosen leisure activity, thus serving as a clear contrast to the principles of relaxation.

276. (A) A conscious and evolving process of achieving full potential.
This concept is described as a dynamic and multidimensional process that goes beyond merely not being sick. It is a conscious, self-directed, and evolving journey toward achieving one's full potential. This perspective emphasizes that health is a proactive state that individuals must continuously work toward, integrating various aspects of their lives to reach a balanced and high quality.

277. (D) Financial
The holistic approach to well-being integrates several key dimensions that affect a person's life quality. These include physical, mental, emotional, social, spiritual, and environmental health. While money can be a barrier to maintaining wellness, it is not explicitly listed as one of the core dimensions of the process itself. Instead, wellness focuses on the internal and external health factors.

278. (B) Time constraints and lack of knowledge.
Achieving and sustaining a high state of well-being is often difficult due to various obstacles. These challenges include a lack of relevant knowledge, insufficient personal motivation, and significant time constraints. Additionally, financial barriers and unsupportive social or physical environments can prevent individuals from making consistent, positive lifestyle choices, making it harder to maintain a balanced and healthy life.

279. (C) Individuals may experience setbacks and must adapt their strategies.
Suggesting that the path to wellness is not a straight line indicates that progress is not always steady or predictable. Individuals frequently encounter setbacks and must adapt their strategies to suit changing circumstances. It highlights that maintaining health is a continuous, lifelong process of growth rather than a simple, one-time achievement where the final goal is reached easily.

280. (D) engaging in a lifelong process of growth and balance.
Sustaining wellness is primarily about engaging in a lifelong process of growth and balance across all aspects of being. It requires a proactive and consistent commitment to positive lifestyle choices, such as a balanced diet and regular activity. The focus is not on reaching a static, final destination but on continuously adapting to life's changes while striving for health.

281. (A) Motor, cognitive, and affective.
Physical education is designed to facilitate comprehensive learning across three primary domains. The motor domain focuses on physical skills and movement patterns. The cognitive domain involves the understanding of rules,

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strategies, and principles. Finally, the affective domain addresses the development of attitudes, values, and social skills. Together, these domains ensure that the learner develops physically, mentally, and emotionally through activity.

282. (B) Learning objectives, content, and learner characteristics.
To create a productive learning environment, a teacher must select and adapt their instructional techniques based on three critical factors. These include the specific learning objectives intended for the session, the nature of the content being taught, and the unique characteristics of the learners. Considering these elements ensures that the instruction is relevant, effective, and tailored to meet student needs.

283. (B) Because learners' needs differ based on factors like age and experience.
Understanding the specific traits of students is vital because their needs vary significantly based on age, developmental stage, and prior experience. A teacher must recognize that motivation levels and learning styles differ among individuals. For instance, the pedagogical needs of a young child differ from those of an adolescent, requiring the instructor to modify their approach to ensure effective learning.

284. (A) Inquiry-based or cooperative learning
While different teaching methods serve various purposes, some are particularly suited for social and strategic development. To foster tactical understanding and teamwork, inquiry-based or cooperative learning methods are most effective. These approaches encourage students to solve problems together and interact socially, which is more beneficial for learning group dynamics and game strategies than direct instruction or repetitive skill drills.

285. (C) teacher's potential or competence to instruct effectively.
In the specialized field of physical education, this term refers to the inherent potential or acquired competence of an individual to be an effective instructor. It encompasses the teacher's ability to facilitate learning across motor, cognitive, and affective domains. This aptitude is demonstrated through subject mastery, communication skills, and the capacity to manage a class for all learners.

286. (D) By teaching individuals to cooperate and interact within a structured environment.
Sports act as a powerful medium for socialization by providing a structured environment where individuals must interact and cooperate to achieve common goals. Through this participation, people learn to navigate social dynamics and internalize the norms and values of their society. This process helps individuals understand that their actions have consequences and that success often requires a collective team effort.

287. (C) Perseverance
Participation in athletic activities is believed to instill several important social values that are applicable beyond the playing field. These include fairness, discipline, and respect for rules and authority. Another key value is the ability to persist through challenges and difficulties to achieve a goal. This quality helps individuals build character and resilience, which are essential for various situations.

288. (B) transferable to other domains of life.
Leadership roles within sports allow individuals to develop critical competencies like communication, motivation, and responsibility. These skills are considered highly valuable because they are transferable to many other areas of life, including professional and social environments. Learning how to lead a group toward a shared objective in sports provides a practical foundation for future leadership in diverse real-world contexts.

289. (D) It can foster personal improvement but can also undermine positive values if overemphasized.
The impact of competition on the social aspect of sports is multifaceted. On one hand, healthy competition can motivate individuals toward personal improvement and the building of character. On the other hand, if winning is overemphasized, it can undermine positive social values. This imbalance may lead to conflict and unsportsmanlike conduct, showing that the social benefits depend on management.

290. (A) preserving and passing on traditional games through generations.
Sports serve as a medium for the preservation and transmission of cultural heritage across generations. By continuing to play and teach

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traditional games and indigenous physical activities, communities maintain their unique identities. This process ensures that ancestral customs and values are not lost but are instead passed down to the youth, strengthening the social fabric and the historical continuity of communities.

291. (C) A religious festival honoring the god Zeus.
The Olympic Games in ancient times were primarily a religious festival dedicated to the god Zeus, held at Olympia. They were not merely athletic competitions but were seen as sacred offerings to the divine. This religious foundation dictated the rules of participation and the significance of the events, with victory representing glory and divine favor rather than material wealth.

292. (A) The Modern Olympic Games include women and athletes from all nations, unlike the Ancient Games.
A major distinction between the two eras of the games lies in their inclusivity and scope. The ancient contests were restricted to freeborn Greek men, excluding women and non-Greeks. In contrast, the modern version is a secular, international event that welcomes athletes from nearly every nation. This includes the participation of women, reflecting a shift toward global solidarity in sports.

293. (D) Glory and divine favor.
In the ancient games, the ultimate prize awarded to victors was a simple wreath made of olive leaves. This award was deeply symbolic, representing glory and the favor of the gods rather than tangible material riches. While it held no financial value, it brought immense prestige to the athlete and their city, signifying that their achievement was recognized by the divine.

294. (B) As similarly structured events with a regional focus.
These major multi-sport events are organized with a structure similar to the Modern Olympic Games but focus on specific geographic or political regions. They aim to foster goodwill and competition among member nations of the Commonwealth or the continent of Asia. By following the Olympic model on a regional scale, they provide athletes with high-level competitive opportunities within these groups.

295. (C) Pierre de Coubertin
The transition from the ancient religious festivals to the contemporary international sporting celebration occurred in the late nineteenth century. This revival in 1896 is attributed to the efforts of Pierre de Coubertin. He envisioned a secular event that would promote ideals such as friendship and fair play on a global stage, leading to the creation of the modern games.

296. (D) To establish and enforce the global rules of a sport.
These global governing bodies occupy the top level of the sporting hierarchy for their respective disciplines. A primary function is to establish and enforce a uniform set of rules worldwide to ensure the integrity of the sport. They also oversee major international competitions and work with other organizations to manage how the sport is practiced and promoted globally.

297. (A) To promote and control a specific sport within one country.
Operating at the national level, these organizations are responsible for the promotion and control of a specific sport within their country. Their duties include organizing national championships, selecting representative teams for international events, and implementing programs to develop the sport locally. They act as the primary link between the domestic sporting community and the international governing bodies of sport.

298. (B) Eminent coaches for their contributions.
Recognition in sports extends beyond the athletes themselves to include those who guide and train them. In the Indian sporting system, this particular honor is conferred upon eminent coaches for their significant contributions to the field. It acknowledges their role in developing talent and achieving excellence, serving as a prestigious incentive that motivates instructors to maintain high coaching standards.

299. (B) affiliation, with the NSF operating under the IF's global framework.
The governance of most sports relies on a structured hierarchy where national and international bodies work together. National

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Sports Federations are typically affiliated with their corresponding International Federations. This relationship allows the national body to operate under a global framework of rules and standards while managing the sport's development domestically, ensuring consistency in how sport is played globally.

300. (A) recognize and incentivize excellence in sports.

Prominent national honors such as this are designed to recognize and incentivize excellence within the sporting community. By acknowledging consistent, outstanding performance over time, these awards serve as a major source of motivation for athletes. They highlight the value of dedication and high-level achievement, encouraging individuals to strive for greatness and bringing prestige to those who represent successfully.

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CHAPTER 02
Exercise Physiology

1. Which of the following best defines Exercise Physiology?
(A) The study of psychological and behavioral responses to physical activity.
(B) The functional study of bodily responses and adaptations to exercise.
(C) The study of anatomical and structural body changes due to exercise.
(D) The study of mechanical and biomechanical principles in human movement.

2. Read the following statements regarding the importance of exercise physiology and select the correct option.
Statement I : Exercise physiology helps in the selection of athletes for specific sports based on their physiological capacities.
Statement II : It provides a scientific basis for conditioning athletes to improve their performance.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

3. What is the most immediate cardiovascular response to the onset of short-term, dynamic physical activity?
(A) A significant decrease in heart rate.
(B) A gradual decrease in systolic blood pressure.
(C) An anticipatory increase in heart rate.
(D) A sharp increase in diastolic blood pressure.

4. Which physiological variable is a primary determinant of an individual's maximal oxygen uptake (VO_2 max), a key indicator of cardiorespiratory fitness?
(A) Maximum respiratory rate
(B) Maximum blood lactate concentration
(C) Maximum muscle glycogen stores
(D) Maximum cardiac output

5. A long-term adaptation to endurance training is an increase in stroke volume. What is the direct physiological cause for this adaptation?
(A) Reduced end-diastolic volume and decreased ventricular filling.
(B) Increased resting heart rate due to heightened sympathetic drive.
(C) Increased left ventricular chamber size and myocardial contractility.
(D) Thickened arterial walls, increasing total peripheral resistance.

6. Read the assertion and reason carefully and select the correct option.
Assertion (A) : Regular endurance training leads to cardiac hypertrophy, specifically an increase in the size of the left ventricular cavity.
Reason (R) : The increased volume load placed on the heart during sustained aerobic exercise stimulates the heart muscle to adapt by increasing its chamber size to accommodate a larger end-diastolic volume.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

7. An untrained individual and a trained endurance athlete are both running at 6 mph. Which physiological response would be expected in the trained athlete compared to the untrained individual?
(A) Higher heart rate at the same absolute workload.
(B) Higher accumulation of blood lactate at the same absolute workload.
(C) Higher respiratory exchange ratio (RER) at the same absolute workload.
(D) Higher stroke volume at the same absolute workload.

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8. Which of the following statements about cardiorespiratory adaptations to exercise is incorrect?
(A) Maximal heart rate significantly increases with long-term endurance training.
(B) Long-term endurance training increases the number of capillaries surrounding individual muscle fibers.
(C) Chronic training results in a lower resting heart rate, a phenomenon known as bradycardia.
(D) Endurance training improves the oxygen-carrying capacity of the blood by increasing total blood volume and red blood cell count.

9. Consider the following statements regarding cardiorespiratory adaptations to long-term physical activity:
(i) Increased maximal cardiac output.
(ii) Decreased resting stroke volume.
(iii) Increased capillarization of skeletal muscles.
(iv) Decreased mitochondrial density in trained muscles.
Which of the above statement(s) is/are correct?
(A) (i) and (ii) only.
(B) (i) and (iii) only.
(C) (ii) and (iv) only.
(D) (iii) and (iv) only.

10. All of the following are characteristics of smooth muscle EXCEPT:
(A) It is striated in appearance under a microscope.
(B) It is found in the walls of hollow organs like the stomach and intestines.
(C) Its contractions are involuntary.
(D) It contracts and relaxes more slowly than skeletal muscle.

11. What is the fundamental, repeating contractile unit of a myofibril, extending from one Z-line to the next?
(A) Sarcolemma
(B) Sarcoplasm
(C) Sarcoplasmic Reticulum
(D) Sarcomere

12. Arrange the following events of the sliding filament theory of muscular contraction in chronological order:
(i) Calcium ions bind to troponin, causing tropomyosin to move and expose active sites on actin.
(ii) An action potential travels down the motor neuron and reaches the neuromuscular junction.
(iii) The myosin head performs a power stroke, pulling the actin filament towards the center of the sarcomere.
(iv) Acetylcholine is released, depolarizing the sarcolemma.
Select the correct sequence:
(A) (ii), (iv), (i), (iii)
(B) (iv), (ii), (iii), (i)
(C) (i), (ii), (iv), (iii)
(D) (ii), (i), (iii), (iv)

13. Which of the following is NOT a primary function of skeletal muscle?
(A) Production of body movement.
(B) Maintenance of posture and body position.
(C) Production of hormones like insulin.
(D) Generation of heat.

14. Read the following statements and select the correct option.
Statement I : Fast-twitch muscle fibers (Type II) are best suited for prolonged, low-intensity activities like marathon running.
Statement II : Slow-twitch muscle fibers (Type I) have a high mitochondrial density and are highly resistant to fatigue.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

15. Match the items in List I with List II and select the correct option.
List I : (Muscle Fiber Characteristic)
P. High Myoglobin Content
Q. High Glycolytic Capacity
R. Slow Contraction Speed
S. Large Fiber Diameter
List II : (Dominant Fiber Type)
1. Type IIb (or IIx)
2. Type I
3. Type I
4. Type IIb (or IIx)
(A) P-2, Q-1, R-3, S-4
(B) P-1, Q-2, R-4, S-3

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(C) P-4, Q-3, R-1, S-2
(D) P-2, Q-4, R-1, S-3

16. A world-class sprinter is likely to have a higher proportion of which muscle fiber type in their leg muscles compared to a world-class marathon runner?
(A) Type I fibers
(B) Type IIx (or IIb) fibers
(C) Type IIa fibers
(D) A balanced 50/50 split of Type I and Type II fibers

17. A weightlifter performs a heavy resistance training program for 12 weeks. Which muscular adaptation is most responsible for the initial, rapid gains in strength seen in the first few weeks?
(A) Significant muscle fiber hypertrophy.
(B) Improved neuromuscular recruitment and coordination.
(C) Conversion of Type I fibers to Type II fibers.
(D) A substantial increase in the number of muscle fibers (hyperplasia).

18. Consider the following characteristics related to muscle fibers:
(i) High oxidative capacity
(ii) Fast contraction speed
(iii) Low resistance to fatigue
(iv) Small motor neuron size
(v) Red color
Which of the above characteristics are associated with Type I muscle fibers?
(A) (i), (iv), and (v) only
(B) (ii), (iii), and (iv) only
(C) (i), (ii), and (v) only
(D) (iii), (iv), and (v) only

19. In the microscopic structure of a muscle fiber, what is the primary role of the Sarcoplasmic Reticulum?
(A) To generate the electrical impulse for contraction.
(B) To produce ATP through aerobic metabolism.
(C) To store and release calcium ions (Ca^{2+}).
(D) To transmit the action potential deep into the muscle fiber.

20. Which statement regarding the sliding filament theory is incorrect?
(A) Myosin heads attach to actin filaments, forming cross-bridges.
(B) ATP is required for both the attachment and detachment of the myosin head.
(C) The Z-lines of the sarcomere move closer together during contraction.
(D) During contraction, the actin and myosin filaments themselves shorten in length.

21. Read the assertion and reason carefully and select the correct option.
Assertion (A) : The transmission of a nerve impulse across the neuromuscular junction is a chemical process.
Reason (R) : The arrival of an action potential at the axon terminal triggers the release of the neurotransmitter acetylcholine, which diffuses across the synaptic cleft to bind with receptors on the muscle fiber.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

22. The term "motor unit" in neuro-muscular physiology refers to:
(A) A single muscle fiber and all the nerves that innervate it.
(B) A single motor neuron and all the muscle fibers it innervates.
(C) The junction between a nerve and a muscle fiber.
(D) The group of muscles responsible for a specific movement.

23. Which of the following statements correctly describes the 'all-or-none' principle as it applies to a motor unit?
(A) Individual fibers in a motor unit contract with varying force depending on neural stimulus strength.
(B) A sub-threshold stimulus will cause only the smallest oxidative fibers within a motor unit to contract.
(C) Only slow-twitch motor units with Type I fibers follow the all-or-none principle during submaximal efforts.

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(D) If a stimulus triggers an action potential, all muscle fibers in that motor unit will contract maximally.

24. Consider the following statements about neural control of motor skills:
(i) Kinesthetic sense organs provide feedback about body position and movement.
(ii) The cerebellum is primarily involved in initiating voluntary movement.
(iii) Skill acquisition involves the formation of a motor engram or memory trace.
(iv) A larger number of motor units are recruited to generate a stronger muscle contraction.
Which of the above statements are correct?
(A) (i), (ii), and (iii) only
(B) (ii), (iii), and (iv) only
(C) (i), (iii), and (iv) only
(D) (i), (ii), and (iv) only

25. The breakdown of a complex food product like a carbohydrate into a simpler molecule like glucose is an example of what type of metabolic process?
(A) Anabolism
(B) Homeostasis
(C) Catabolism
(D) Gluconeogenesis

26. Read the following statements and select the correct option.
Statement I : The aerobic energy system is the primary source of ATP for short, explosive activities like a 100-meter sprint.
Statement II : The anaerobic glycolytic system produces ATP rapidly but also produces lactic acid as a byproduct, which can contribute to fatigue.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

27. Match the items in List I with List II and select the correct option.
List I : (Energy System)
P. ATP-PC System
Q. Anaerobic Glycolysis
R. Aerobic System (at rest/low intensity)
S. Aerobic System (high intensity)
List II : (Primary Fuel Source)
1. Glycogen/Glucose
2. Fats (Triglycerides)
3. Phosphocreatine
4. Muscle Glycogen
(A) P-1, Q-2, R-4, S-3
(B) P-3, Q-1, R-2, S-4
(C) P-2, Q-3, R-1, S-4
(D) P-3, Q-4, R-2, S-1

28. An athlete is performing a 400-meter run, which takes approximately 50-60 seconds. Which energy system would be the predominant contributor to ATP production during this event?
(A) ATP-PC system
(B) Anaerobic Glycolysis
(C) Aerobic system
(D) Fat oxidation system

29. What is the role of Golgi Tendon Organs (GTOs) in the neural control of motor skills?
(A) They sense changes in muscle length and the specific rate of stretch.
(B) They initiate the stretch reflex to cause immediate muscle contraction.
(C) They sense muscle tension and cause relaxation to prevent injury.
(D) They are primarily responsible for the sensation of pain in the muscle.

30. Consider the following statements regarding the microscopic structure of muscle:
(i) The A-band contains both actin and myosin filaments.
(ii) The H-zone is the central region of the A-band containing only myosin.
(iii) The I-band contains only actin filaments.
(iv) The Z-line is a protein disc that anchors the myosin filaments.
(v) Titin is an elastic protein that helps stabilize the myosin filament.
Which of the above statements are correct?
(A) (i), (ii), (iii), (iv) only
(B) (i), (ii), (iii), (v) only
(C) (ii), (iii), (iv), (v) only
(D) (i), (iii), (iv), (v) only

31. A researcher is measuring a subject's oxygen consumption and carbon dioxide production during a graded exercise test. This technique is an example of:

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(A) Indirect calorimetry.
(B) Direct calorimetry.
(C) Isotopic measurement of energy expenditure.
(D) Biomechanical analysis of work output.

32. The concept of "recovery oxygen" or EPOC (Excess Post-exercise Oxygen Consumption) refers to the:
(A) Volume of oxygen consumed during the exercise bout itself.
(B) Elevated oxygen consumption above resting levels that occurs after exercise has ceased.
(C) Maximum amount of oxygen a person can utilize during intense exercise.
(D) Deficit of oxygen at the beginning of an exercise bout.

33. Read the assertion and reason carefully and select the correct option.
Assertion (A) : During the initial minutes of moderate exercise, there is an oxygen deficit.
Reason (R) : The aerobic energy system responds instantaneously to the energy demands of exercise, preventing any lag in oxygen supply.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

34. Which of the following factors is considered a primary cause of physiological fatigue during high-intensity, short-duration exercise?
(A) Accumulation of metabolic byproducts like H+ ions (leading to acidosis).
(B) Depletion of muscle and liver glycogen stores.
(C) Dehydration and electrolyte imbalance.
(D) A significant decrease in core body temperature.

35. For optimal restoration of muscle glycogen stores after a prolonged, strenuous workout, when is it most effective for an athlete to consume carbohydrates?
(A) Immediately before the next workout session.
(B) Only after a full 24 hours of rest.
(C) Within 30-60 minutes post-exercise.
(D) Exclusively in the form of complex carbohydrates 6 hours post-exercise.

36. Match the items in List I with List II and select the correct option.
List I : (Physiological Term)
P. Oxygen Deficit
Q. EPOC (Recovery Oxygen)
R. Lactate Threshold
S. VO_2 max
List II : (Description)
1. Point during exercise where lactate production exceeds clearance
2. Elevated oxygen uptake post-exercise
3. Lag in oxygen uptake at the beginning of exercise
4. Maximal rate of oxygen consumption
(A) P-3, Q-2, R-1, S-4
(B) P-1, Q-4, R-2, S-3
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-3, R-1, S-4

37. A marathon runner "hits the wall" around mile 20. This experience of sudden, severe fatigue is most directly related to the depletion of which energy store?
(A) Phosphocreatine
(B) Intramuscular triglycerides
(C) Muscle and liver glycogen
(D) Blood glucose only

38. Which of the following statements about the nutritional aspects of performance is incorrect?
(A) Carbohydrates are the primary fuel source for high-intensity exercise.
(B) Fat intake should be completely eliminated from an athlete's diet for optimal performance.
(C) Protein intake is crucial for muscle repair and synthesis after resistance exercise.
(D) Dehydration by as little as 2% of body weight can impair aerobic performance.

39. Consider the following statements related to the recovery process after exercise:
(i) The fast component of EPOC is primarily associated with restoring ATP and PC stores.
(ii) The slow component of EPOC involves converting lactate to glucose in the liver.
(iii) Restoration of muscle glycogen is an ATP-dependent process.

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(iv) Cooling down with light activity can hinder the lactate clearance process.

Which of the above statements are correct?

(A) (i), (ii), and (iii) only
(B) (i), (ii), and (iv) only
(C) (i), (iii), and (iv) only
(D) (ii), (iii), and (iv) only

40. When exercising in a hot and humid environment, what is the body's primary mechanism for heat dissipation, which becomes less effective as humidity increases?

(A) Evaporation of sweat
(B) Conduction
(C) Convection
(D) Radiation

41. Which physiological response occurs when an individual first acclimatizes to high altitude?

(A) Decreased heart rate at rest and during submaximal exercise.
(B) A decrease in red blood cell production.
(C) Increased breathing rate (hyperventilation).
(D) An increase in plasma volume.

42. Arrange the following physiological adaptations to heat acclimatization in the order they typically occur:

(i) Increased plasma volume.
(ii) Earlier onset of sweating.
(iii) Increased sweat rate.
(iv) Reduced salt concentration in sweat.

Select the correct sequence:

(A) (i), (ii), (iii), (iv)
(B) (ii), (iii), (i), (iv)
(C) (iii), (i), (iv), (ii)
(D) (i), (iii), (ii), (iv)

43. Which of the following is NOT a physiological risk associated with exercising in a cold environment?

(A) Hypothermia
(B) Frostbite
(C) Exercise-induced bronchospasm
(D) Increased risk of heat stroke

44. Read the following statements and select the correct option.

Statement I : On average, females have a higher percentage of body fat and a lower percentage of muscle mass compared to males of similar size.

Statement II : These differences in body composition have no impact on athletic performance in strength and power events.

(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

45. Which of the following statements about physiological gender differences relevant to sports is most accurate?

(A) Females have a larger heart size relative to body size, leading to a higher stroke volume.
(B) The trainability of muscle tissue is significantly lower in females than in males.
(C) Males typically have higher hemoglobin concentrations, resulting in a greater oxygen-carrying capacity.
(D) Females have a distinct advantage in all endurance sports due to superior fat metabolism.

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46. The "female athlete triad" is a syndrome involving the interrelationship of which three conditions?

(A) Anemia, dehydration, and stress fractures.
(B) Overtraining, burnout, and depression.
(C) Hypertension, hyperlipidemia, and hyperglycemia.
(D) Disordered eating, amenorrhea, and osteoporosis.

47. A female distance runner who has not had a menstrual cycle for over six months is experiencing a condition known as:

(A) Amenorrhea
(B) Dysmenorrhea
(C) Oligomenorrhea
(D) Menarche

48. Which of the following is a primary physiological consequence of the aging process?

(A) An increase in maximal heart rate.
(B) A decline in maximal oxygen uptake (VO_2 max).
(C) A decrease in sarcopenia, or age-related muscle loss.
(D) An increase in bone mineral density.

49. Consider the following physiological changes and identify those typically associated with the aging process:
(i) Decrease in muscle mass and strength.
(ii) Increase in maximal cardiac output.
(iii) Decrease in bone density.
(iv) Increase in resting metabolic rate.
(v) Decrease in nerve conduction velocity.
Which of the above statements are correct?
(A) (i), (ii), and (iv) only
(B) (i), (iii), and (v) only
(C) (ii), (iii), and (iv) only
(D) (i), (iv), and (v) only

50. Lifestyle management for healthful aging emphasizes regular physical activity. What is the most significant benefit of resistance training for older adults?
(A) It helps to counteract sarcopenia and maintain functional strength.
(B) It primarily improves cardiovascular fitness.
(C) It has no effect on bone mineral density.
(D) It is only beneficial for adults under the age of 65.

51. Read the assertion and reason carefully and select the correct option.
Assertion (A) : The application of cryotherapy (cold therapy) immediately after an acute soft tissue injury helps in reducing swelling and pain.
Reason (R) : Cold application causes vasodilation, increasing blood flow to the injured area, which speeds up the removal of inflammatory mediators.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

52. The physiological response to thermotherapy (heat application) in a rehabilitation setting primarily involves:
(A) Vasoconstriction and decreased tissue metabolism.
(B) Vasodilation, increased blood flow, and increased tissue extensibility.
(C) Increased muscle spindle firing rate.
(D) A decrease in local temperature and nerve conduction velocity.

53. Which term refers to any substance or phenomenon that is believed to enhance athletic performance?
(A) Placebo
(B) Therapeutic modality
(C) Ergogenic aid
(D) Nootropic

54. An athlete consumes sodium bicarbonate before a high-intensity event like an 800-meter run. What is the intended physiological mechanism of this ergogenic aid?
(A) To increase the oxygen-carrying capacity of the blood.
(B) To act as a buffer against the accumulation of hydrogen ions (H+), delaying fatigue.
(C) To increase the stores of phosphocreatine in the muscle.
(D) To stimulate the central nervous system and reduce the perception of effort.

55. The massage manipulation known as 'pétrissage' primarily involves which action?
(A) Light, stroking movements.
(B) Tapping or percussion movements.
(C) Kneading, lifting, and squeezing of the muscle tissue.
(D) Deep, circular friction movements.

56. What is the primary physiological response sought from post-event sports massage?
(A) To increase muscle tension and prepare for the next competition.
(B) To enhance the clearance of metabolic waste and reduce muscle soreness.
(C) To cause micro-trauma to the muscle to stimulate hypertrophy.
(D) To significantly increase muscle strength and power immediately.

57. From a physiological standpoint, why is the trainability of female athletes not fundamentally different from that of male athletes?
(A) Because hormonal differences have no impact on adaptation to training.
(B) Because females have a naturally higher VO_2 max.
(C) Because muscle tissue in both genders responds to the stress of exercise in the same

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basic way.
(D) Because males and females have identical body composition.

58. Which of the following is NOT a recognized benefit of a properly conducted warm-up before exercise?
(A) Increased muscle and core temperature.
(B) Maximization of muscle glycogen stores.
(C) Increased blood flow to active muscles.
(D) Enhanced speed of metabolic reactions.

59. Which statement best explains the concept of overload in exercise training?
(A) The body must be exercised at a level beyond that to which it is normally accustomed to achieve a training effect.
(B) Training benefits are lost if training is discontinued.
(C) Training programs must be tailored to the individual needs and capacities of the participant.
(D) Training should always be performed at maximal intensity to be effective.

60. Identify the incorrect pair regarding muscle characteristics.
(A) Excitability : Ability to respond to a stimulus.
(B) Elasticity : Ability to generate a forceful contraction.
(C) Contractility : Ability to shorten forcibly.
(D) Extensibility : Ability to be stretched or extended.

61. What is the primary function of myoglobin within a muscle fiber?
(A) It binds to calcium to initiate contraction.
(B) It serves as an intracellular oxygen storage and transport molecule.
(C) It generates the action potential along the sarcolemma.
(D) It breaks down ATP to release energy for the power stroke.

62. In the context of the sliding filament theory, what is the direct role of ATP?
(A) It binds to troponin to move tropomyosin.
(B) It causes the release of calcium from the sarcoplasmic reticulum.
(C) It powers the movement of the myosin head and allows it to detach from actin.
(D) It serves as the neurotransmitter at the neuromuscular junction.

63. Which type of muscle contraction occurs when the muscle develops tension but does not change in length, such as holding a weight in a static position?
(A) Isotonic
(B) Isometric
(C) Isokinetic
(D) Eccentric

64. Resistance training leads to an increase in muscle size. This adaptation is primarily due to:
(A) An increase in the number of muscle fibers (hyperplasia).
(B) An increase in the size of existing muscle fibers (hypertrophy).
(C) An increase in the amount of connective tissue within the muscle.
(D) An increase in the number of motor units in the muscle.

65. Which proprioceptor is responsible for detecting the rate and magnitude of muscle stretch, thereby initiating the stretch reflex?
(A) Golgi Tendon Organ
(B) Pacinian Corpuscle
(C) Muscle Spindle
(D) Ruffini Ending

66. What is the final electron acceptor in the electron transport chain during aerobic metabolism?
(A) Carbon Dioxide
(B) Oxygen
(C) Water
(D) Pyruvate

67. The process of forming glucose from non-carbohydrate sources, such as lactate or amino acids, primarily in the liver, is known as:
(A) Glycolysis
(B) Glycogenesis
(C) Gluconeogenesis
(D) Glycogenolysis

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68. An RER (Respiratory Exchange Ratio) value of 1.00 or slightly above during high-intensity exercise indicates that the body is primarily metabolizing which fuel source?
(A) Fats

(B) Proteins
(C) Carbohydrates
(D) A 50/50 mix of fats and carbohydrates

69. Which of the following is NOT considered a part of the "slow component" of recovery oxygen (EPOC)?
(A) Restoration of ATP and phosphocreatine stores.
(B) Conversion of lactate to glucose (Cori cycle).
(C) Elevated heart rate and ventilation.
(D) Increased body temperature.

70. The physiological phenomenon where heart rate increases over time during prolonged, moderate-intensity exercise in a warm environment, despite a constant workload, is known as:
(A) Cardiovascular drift
(B) The Valsalva maneuver
(C) Post-exercise hypotension
(D) The Frank-Starling mechanism

71. When moving from sea level to a high-altitude environment, the partial pressure of oxygen (PO_2) in the ambient air:
(A) Increases.
(B) Remains the same, but the percentage of oxygen decreases.
(C) Decreases.
(D) Remains the same, but air density increases.

72. From a physiological perspective, why might females have a potential advantage in ultra-endurance events compared to shorter-duration events?
(A) A greater ability to metabolize fat as a fuel source.
(B) A significantly higher maximal oxygen uptake.
(C) A higher proportion of fast-twitch muscle fibers.
(D) A greater capacity for anaerobic glycolysis.

73. The loss of bone mass associated with amenorrhea in the female athlete triad is primarily due to:
(A) High levels of testosterone.
(B) Low levels of estrogen.
(C) Excessive calcium intake.
(D) High levels of progesterone.

74. A lifestyle of regular, moderate exercise in older adults has been shown to have which of the following effects?
(A) Accelerates the decline in VO_2 max.
(B) Attenuates the loss of muscle mass and strength.
(C) Increases arterial stiffness and blood pressure.
(D) Worsens insulin sensitivity and glucose control.

75. In a rehabilitation context, which therapeutic modality would be most appropriate to increase tissue extensibility and reduce joint stiffness before a stretching session?
(A) Cryotherapy (ice pack)
(B) Thermotherapy (hot pack)
(C) Intermittent compression
(D) High-voltage electrical stimulation

76. The ergogenic aid creatine monohydrate is most likely to improve performance in which of the following activities?
(A) A marathon (42.2 km)
(B) A series of short, explosive sprints with brief recovery.
(C) A 10 km cross-country ski race.
(D) A 1-hour cycling time trial.

77. Which massage manipulation is characterized by light, rapid, stimulating strokes performed with the hands or fingers, such as hacking or cupping?
(A) Effleurage
(B) Tapotement
(C) Pétrissage
(D) Friction

78. Which statement correctly identifies a key principle of exercise physiology?
(A) The body's physiological systems are static and do not adapt to external stimuli.
(B) The principle of reversibility indicates that fitness gains are lost when training ceases.
(C) The principle of specificity states that any type of training improves all aspects of fitness.
(D) All individuals respond to the same training program in an identical manner.

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79. A short-term cardiorespiratory response to exercise includes a redistribution of blood flow. Which organ system experiences a significant increase in blood flow percentage during vigorous exercise?
(A) Kidneys
(B) Skeletal muscles
(C) Digestive system
(D) Brain

80. The increase in a-vO_2 difference (arteriovenous oxygen difference) during exercise is a result of:
(A) The blood carrying more oxygen away from the lungs.
(B) The heart pumping less blood to the tissues.
(C) The active muscles extracting more oxygen from the blood.
(D) The lungs becoming less efficient at oxygenating blood.

81. Which of the following is a chronic adaptation to endurance training that enhances oxygen delivery to the muscle?
(A) Decreased blood volume.
(B) Increased density of capillaries per muscle fiber.
(C) Decreased myoglobin content in muscle cells.
(D) Decreased mitochondrial volume.

82. In muscle physiology, what is the thin filament primarily composed of?
(A) Myosin
(B) Titin
(C) Actin
(D) Nebulin

83. Which of the following accurately describes a characteristic of cardiac muscle tissue?
(A) It is under voluntary control.
(B) Its cells are connected by intercalated discs.
(C) It lacks striations.
(D) It is not capable of hypertrophy.

84. A powerlifter would likely see the greatest degree of hypertrophy in which muscle fiber type as an adaptation to heavy resistance training?
(A) Type I
(B) Type II
(C) Intermediate fibers
(D) Cardiac muscle fibers

85. The process of nerve impulse transmission involves the rapid influx of which ion into the neuron to cause depolarization?
(A) Sodium (Na^+)
(B) Potassium (K^+)
(C) Calcium (Ca^{2+})
(D) Chloride (Cl^-)

86. The ability to sense the position and movement of one's limbs in space without visual cues is known as:
(A) Nociception
(B) Kinesthesis
(C) Thermoreception
(D) Olfaction

87. During prolonged, low-intensity exercise (e.g., walking for 2 hours), which substrate becomes the more dominant fuel source as exercise continues?
(A) Muscle glycogen
(B) Blood glucose
(C) Free fatty acids
(D) Amino acids

88. Which of the following is a direct method of measuring energy cost of exercise?
(A) Measuring heat production in a sealed chamber.
(B) Measuring heart rate response.
(C) Measuring oxygen consumption.
(D) Using accelerometers to quantify movement.

89. A major contributing factor to central fatigue (as opposed to peripheral fatigue) involves changes within the:
(A) Muscle fiber itself.
(B) Neuromuscular junction.
(C) Central nervous system (brain and spinal cord).
(D) Sarcoplasmic reticulum.

90. The fast component of EPOC is primarily responsible for replenishing which high-energy phosphate?
(A) Adenosine Diphosphate (ADP)
(B) Adenosine Monophosphate (AMP)
(C) Phosphocreatine (PCr)
(D) Nicotinamide Adenine Dinucleotide (NAD)

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91. Which nutritional strategy is most critical for an athlete to prevent dehydration during performance?
(A) Consuming a high-protein meal before the event.
(B) Ensuring adequate fluid intake before, during, and after exercise.
(C) Loading with carbohydrates the week before the event.
(D) Taking vitamin supplements on the day of competition.

92. Exercising at altitude where the air is "thinner" poses a physiological challenge primarily because of:
(A) The lower percentage of oxygen in the air.
(B) The lower partial pressure of oxygen.
(C) The higher air temperature.
(D) The increased air resistance.

93. Which physiological difference contributes to males generally having greater absolute strength than females?
(A) Higher percentage of body fat.
(B) Greater muscle mass.
(C) Smaller muscle fiber size.
(D) Lower testosterone levels.

94. Dysmenorrhea, a special problem that can affect female athletes, refers to:
(A) The absence of menstruation.
(B) Irregular menstrual cycles.
(C) Painful menstruation.
(D) The first menstrual period.

95. Sarcopenia, a key physiological consequence of aging, is best defined as:
(A) Age-related loss of bone mineral density.
(B) Age-related loss of skeletal muscle mass and function.
(C) Age-related increase in body fat.
(D) Age-related stiffening of the arteries.

96. For healthful aging, what is a primary benefit of regular aerobic exercise like walking or cycling?
(A) Maximizing muscle hypertrophy.
(B) Maintaining cardiovascular health and function.
(C) Significantly increasing maximum lifting strength.
(D) Reversing the aging process completely.

97. An immediate physiological response to the application of an ice pack on an acute ankle sprain is:
(A) Local vasodilation.
(B) Local vasoconstriction.
(C) Increased enzymatic activity.
(D) Increased nerve conduction velocity.

98. An anabolic steroids are a class of ergogenic aids that are chemically similar to which hormone, and primarily promote muscle growth?
(A) Testosterone
(B) Insulin
(C) Cortisol
(D) Epinephrine

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99. The massage stroke 'Effleurage' is typically used at the beginning and end of a massage sequence. Its primary physiological aim is to:
(A) Break up deep adhesions in the muscle.
(B) Increase circulation and promote relaxation.
(C) Vigorously stimulate the nervous system.
(D) Apply intense, localized pressure to trigger points.

100. The scope of exercise physiology in physical education and sports includes all of the following EXCEPT:
(A) Analyzing the nutritional requirements for different sports.
(B) Evaluating the tactical strategies of team sports.
(C) Designing training programs based on physiological principles.
(D) Understanding the environmental effects on performance.

101. Read the following statements and select the correct option.
Statement I : During exercise, systolic blood pressure increases in proportion to exercise intensity.
Statement II : During dynamic exercise, diastolic blood pressure typically remains stable or may even decrease slightly.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

102. Read the assertion and reason carefully and select the correct option.
Assertion (A) : A trained endurance athlete has a higher stroke volume at rest compared to an untrained person.
Reason (R) : This is due to adaptations like increased left ventricular volume and increased myocardial contractility, allowing the heart to pump more blood per beat.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

103. Which is the most appropriate description of the function of tropomyosin in an un-stimulated muscle fiber?
(A) It binds to calcium ions to trigger contraction.
(B) It covers the myosin-binding sites on the actin filament.
(C) It forms the thick filament of the sarcomere.
(D) It releases acetylcholine at the neuromuscular junction.

104. Which of the following correctly pairs a muscle function with its description?
(A) Posture maintenance : Generation of powerful, rapid movements.
(B) Heat production : A byproduct of muscle metabolism that helps maintain body temperature.
(C) Joint stabilization : Pumping blood throughout the body.
(D) Movement production : Involuntary control of internal organ diameter.

105. Match the items in List I with List II and select the correct option.
List I : (Component)
P. Acetylcholine (ACh)
Q. Calcium Ions (Ca^{2+})
R. ATP
S. Troponin
List II : (Function in Muscle Contraction)
1. Binds to troponin, initiating the contraction sequence.
2. Neurotransmitter that depolarizes the sarcolemma.
3. The protein that calcium binds to.
4. Provides energy for the power stroke and cross-bridge detachment.
(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-1, R-4, S-3
(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-3, R-2, S-1

106. An athlete is performing an activity that lasts for 8 seconds at maximum intensity, such as a shot put or a high jump. Which energy system is providing the vast majority of the ATP for this muscle action?
(A) Aerobic glycolysis
(B) ATP-PC system
(C) Anaerobic glycolysis
(D) Fat oxidation

107. Which statement about the transmission of a nerve impulse is incorrect?
(A) The resting membrane potential of a neuron is negative on the inside relative to the outside.
(B) Repolarization involves the outflow of potassium ions (K^+) from the neuron.
(C) The myelin sheath slows down the speed of nerve impulse conduction.
(D) A synapse is the junction between two neurons or a neuron and an effector cell.

108. Consider the following statements regarding physiological adaptations resulting from consistent resistance training:
(i) Increased strength of tendons and ligaments.
(ii) Decreased bone mineral density.
(iii) Increased activity of glycolytic enzymes.
(iv) Significant increase in maximal oxygen uptake (VO_2 max).
(v) Increased size of Type II muscle fibers.
Which of the above statements are correct?
(A) (i), (ii), and (iv) only
(B) (ii), (iv), and (v) only
(C) (i), (iii), and (v) only
(D) (i), (iii), and (iv) only

109. The Cori Cycle involves the transport of lactate from the muscle to the liver, where it is converted back into:
(A) Pyruvate
(B) Glucose
(C) Amino acids
(D) Acetyl-CoA

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110. Consider the following scenario regarding performance at high altitude: A mountaineer is attempting to summit Mt. Everest without supplemental oxygen. What long-term physiological adaptation would be most crucial for their success?
(A) A decrease in hemoglobin concentration to make blood less viscous.
(B) A chronic decrease in ventilation rate to conserve energy.
(C) A significant increase in muscle fiber size for greater strength.
(D) An increase in red blood cell production (polycythemia) to enhance oxygen-carrying capacity.

111. Arrange the following steps involved in oxygen transport and utilization during exercise in the correct order:
(i) Oxygen is extracted from the blood by the muscle tissues.
(ii) Oxygen binds to hemoglobin in the pulmonary capillaries.
(iii) Oxygen is used as the final electron acceptor in the mitochondria.
(iv) The heart pumps oxygenated blood to the systemic circulation.
Select the correct sequence:
(A) (ii), (iv), (i), (iii)
(B) (iv), (ii), (iii), (i)
(C) (ii), (i), (iv), (iii)
(D) (i), (iii), (ii), (iv)

112. Which of the following is NOT a primary physiological concern for women in sports?
(A) Iron deficiency anemia.
(B) Increased risk of certain knee injuries (e.g., ACL tears).
(C) A fundamentally lower capacity for muscle tissue to adapt to training.
(D) The components of the female athlete triad.

113. An effective lifestyle management program for promoting healthful aging should include all of the following EXCEPT:
(A) Regular aerobic and resistance exercise.
(B) A balanced diet rich in nutrients.
(C) Avoidance of all physical stress and activity.
(D) Sufficient sleep and stress management.

114. Which physiological effect is common to both massage and the application of moderate heat (thermotherapy)?
(A) Localized vasoconstriction.
(B) Increased local blood flow and circulation.
(C) A significant decrease in core body temperature.
(D) Numbing of nerve endings through cooling.

115. Caffeine is a widely used ergogenic aid. Its primary mechanism for enhancing endurance performance is thought to be:
(A) Increasing muscle mass through protein synthesis.
(B) Acting as a central nervous system stimulant and potentially increasing fat mobilization.
(C) Buffering lactic acid in the muscle.
(D) Directly increasing the oxygen-carrying capacity of the blood.

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116. Consider the following statements regarding cardiorespiratory adaptations and select the correct option.
(i) Endurance training increases the blood's oxygen-carrying capacity by increasing plasma volume and red blood cell count.
(ii) Maximal heart rate is genetically determined and does not significantly change with training.
(iii) A trained athlete exhibits a lower heart rate at any given submaximal workload compared to an untrained person.
(iv) Stroke volume at maximal exercise decreases after a period of endurance training.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii) only
(B) (i), (ii), and (iv) only
(C) (i), (iii), and (iv) only
(D) (ii), (iii), and (iv) only

117. What defines an 'isotonic' muscle contraction?
(A) The muscle develops tension but its length remains constant.
(B) The muscle generates force and changes in length (shortens or lengthens).
(C) The muscle contracts at a constant velocity.
(D) The muscle is stretched beyond its normal resting length.

118. Which statement best describes the role of the nervous system in muscular adaptations to exercise?
(A) Neural adaptations, such as improved motor unit recruitment, are primarily responsible for strength gains in the later stages of training.
(B) Neural adaptations have little to no role in the increase of muscular strength.
(C) Early strength gains in a resistance training program are largely due to neural factors like increased motor unit firing rate and synchronization.
(D) The nervous system adapts by decreasing the number of active motor units for a given task.

119. A Respiratory Exchange Ratio (RER) of 0.70 at rest signifies that the body's primary energy source is:
(A) Carbohydrates.
(B) Proteins.
(C) Fats.
(D) A mix of carbohydrates and proteins.

120. Which factor is the primary cause of the physiological challenges (e.g., breathlessness, increased heart rate) experienced when exercising in a hot, humid environment?
(A) The body's ability to dissipate heat via evaporation is severely impaired.
(B) The high temperature causes vasodilation, shunting blood away from the skin.
(C) The humidity increases the oxygen content of the air, overloading the lungs.
(D) The heat causes a dramatic drop in metabolic rate.

121. The term "trainability" in the context of women in sports refers to:
(A) The absolute performance capacity of female athletes.
(B) The fact that females cannot improve their fitness through exercise.
(C) The responsiveness of physiological systems to a training stimulus, which is similar between genders.
(D) The idea that women should only train for endurance sports.

122. Which of the following is a key component of 'lifestyle management' for healthful aging?
(A) Adopting a sedentary lifestyle to conserve energy.
(B) Increasing intake of processed foods for convenience.
(C) Engaging in regular, multi-component physical activity.
(D) Avoiding social engagement to reduce stress.

123. The physiological principle behind using an intermittent compression device in rehabilitation is to:
(A) Heat the underlying tissue to increase flexibility.
(B) Reduce edema (swelling) by mechanically pushing fluid out of the interstitial space.
(C) Strengthen the muscle through isometric contraction.
(D) Deliver electrical current to block pain signals.

124. What is the main physiological purpose of "blood doping" as an ergogenic aid?
(A) To increase the buffering capacity of the blood.
(B) To increase the number of red blood cells and thus the blood's oxygen-carrying capacity.
(C) To increase muscle glycogen stores before an event.
(D) To act as a stimulant to the central nervous system.

125. The massage manipulation that involves applying deep, sustained pressure to a specific point, often a "trigger point," to relieve tension is known as:
(A) Tapotement
(B) Effleurage
(C) Ischemic compression or friction
(D) Pétrissage

126. Which of the following is a defining characteristic of Type IIx (or IIb) muscle fibers?
(A) High mitochondrial density
(B) High resistance to fatigue
(C) High concentration of myoglobin
(D) High glycolytic enzyme activity

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127. Read the following statements and select the correct option.
Statement I : The sliding filament theory states that muscle contraction occurs because the thick and thin filaments slide past one another.
Statement II : During this process, the I-band and H-zone shorten, while the A-band remains the same length.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

128. Read the assertion and reason carefully and select the correct option.
Assertion (A) : In an untrained individual, the lactate threshold typically occurs at a lower percentage of their VO_2 max compared to a trained endurance athlete.
Reason (R) : Endurance training enhances the muscle's ability to clear lactate and increases its oxidative capacity, thus delaying the onset of blood lactate accumulation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

129. The "size principle" of motor unit recruitment states that:
(A) Larger, fast-twitch motor units are recruited first, followed by smaller, slow-twitch units.
(B) Motor units are recruited randomly regardless of the force required.
(C) Smaller, slow-twitch motor units are recruited first, followed by larger, fast-twitch units as more force is needed.
(D) Only one motor unit is active at any given time.

130. What is the primary role of the kinesthetic sense organs (proprioceptors) in the neural control of motor skills?
(A) To provide the central nervous system with feedback about body and limb position, movement, and force.
(B) To initiate voluntary thought processes for movement.
(C) To detect external temperature changes.
(D) To transmit pain signals from the muscles to the brain.

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131. Match the items in List I with List II and select the correct option.
List I : (Term)
P. Cardiac Output
Q. Stroke Volume
R. a-vO_2 Difference
S. VO_2 max
List II : (Best Description)
1. Volume of blood pumped by the heart in one beat.
2. The difference in oxygen content between arterial and venous blood.
3. The highest rate at which an individual can consume oxygen during exercise.
4. Volume of blood pumped by the heart per minute.
(A) P-4, Q-1, R-2, S-3
(B) P-1, Q-4, R-3, S-2
(C) P-4, Q-2, R-1, S-3
(D) P-2, Q-1, R-4, S-3

132. The complete metabolism of one molecule of glucose via aerobic pathways yields significantly more ATP than metabolism via anaerobic glycolysis. What is the approximate net ATP yield from aerobic metabolism of one glucose molecule?
(A) 2-3 ATP
(B) 10-12 ATP
(C) 32-38 ATP
(D) 100+ ATP

133. Which of these physiological events is part of the restoration of energy stores during the recovery process?
(A) Depletion of phosphocreatine.
(B) Resynthesis of muscle and liver glycogen from carbohydrates.
(C) Breakdown of muscle protein for energy.
(D) Continued accumulation of lactate in the muscle.

134. Consider the following statements regarding the impact of aging on the cardiorespiratory system:
(i) There is a progressive decline in maximal heart rate.
(ii) Arterial stiffening leads to an increase in systolic blood pressure.

(iii) Maximal stroke volume generally decreases.
(iv) Resting heart rate significantly increases with age.
(v) The heart becomes more compliant and elastic.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii) only
(B) (ii), (iv), and (v) only
(C) (i), (iii), and (iv) only
(D) (iii), (iv), and (v) only

135. The physiological rationale for using therapeutic modalities in rehabilitation is to:
(A) Replace the need for therapeutic exercise.
(B) Create a more optimal environment for the body's natural healing processes.
(C) Primarily focus on the psychological recovery of the athlete.
(D) Speed up healing by inducing a high level of inflammation.

136. A key difference between cardiac muscle and skeletal muscle is that cardiac muscle:
(A) Is not striated.
(B) Can exhibit autorhythmicity (contracts spontaneously).
(C) Is under voluntary control.
(D) Does not require calcium for contraction.

137. Which of the following is NOT a characteristic of Type I (slow-twitch) muscle fibers?
(A) Red in color
(B) High fatigue resistance
(C) Used for sprinting and jumping
(D) High oxidative capacity

138. The microscopic structure that serves as the cell membrane of a muscle fiber is the:
(A) Sarcomere
(B) Sarcolemma
(C) Sarcoplasm
(D) Myofibril

139. What is the primary cause for the increase in ventilation (breathing rate and depth) during exercise?
(A) The need to cool the body down.
(B) A conscious effort to breathe more.
(C) The need to supply more oxygen and remove carbon dioxide.
(D) The increase in blood pH.

140. A long-term adaptation to anaerobic training (e.g., sprinting) is an increase in the stores of:
(A) Intramuscular triglycerides.
(B) ATP and phosphocreatine.
(C) Myoglobin.
(D) Mitochondrial enzymes.

141. The neurotransmitter released at the neuromuscular junction to initiate muscle contraction is:
(A) Dopamine
(B) Serotonin
(C) Acetylcholine
(D) Epinephrine

142. The metabolism of food products to provide energy for exercise involves breaking down which three macronutrients?
(A) Carbohydrates, water, and vitamins.
(B) Carbohydrates, fats, and proteins.
(C) Proteins, fats, and minerals.
(D) Vitamins, minerals, and water.

143. During rest, the body's energy needs are met almost exclusively by which system?
(A) ATP-PC system
(B) Anaerobic glycolysis
(C) Aerobic system
(D) Lactic acid system

144. Which of the following is a potential cause of exercise-induced fatigue related to the muscle itself (peripheral fatigue)?
(A) Decreased motivation from the central nervous system.
(B) Accumulation of H+ ions, interfering with enzyme activity and calcium binding.
(C) Depletion of the neurotransmitter acetylcholine.
(D) A drop in blood glucose levels affecting the brain.

145. What is the primary role of consuming protein as part of a recovery nutrition strategy?
(A) To rapidly replenish muscle glycogen stores.
(B) To provide the building blocks (amino acids) for muscle repair and synthesis.
(C) To rehydrate the body after fluid loss.
(D) To serve as the main energy source for the recovery process.

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146. A major physiological response to exercising in a cold environment is:
(A) Peripheral vasodilation to release heat.
(B) Shivering and peripheral vasoconstriction to conserve heat.
(C) A decreased metabolic rate to conserve energy.
(D) An increased sweat rate to warm the skin.

147. Relative to body weight, the trainability of women, in terms of percentage strength gains, is:
(A) Significantly lower than men.
(B) Similar to that of men.
(C) Slightly lower than men.
(D) Significantly higher than men.

148. A special problem for some female athletes, iron-deficiency anemia, can impair performance primarily by:
(A) Reducing bone mineral density.
(B) Decreasing the blood's oxygen-carrying capacity.
(C) Causing painful menstruation.
(D) Increasing body fat percentage.

149. One of the main goals of "healthful aging" is to prolong the healthspan. What does 'healthspan' refer to?
(A) The number of years a person lives free from chronic disease and disability.
(B) The total number of years a person is alive.
(C) The age at which a person retires from work.
(D) The maximum achievable human lifespan.

150. Which of the following physiological responses would be expected from a pre-event massage that is light and stimulating?
(A) Deep relaxation and sleepiness.
(B) Increased awareness and blood flow to the muscles.
(C) Reduction of chronic inflammation.
(D) Significant breakdown of muscle adhesions.

151. Which of the following is considered the "gold standard" for measuring cardiorespiratory fitness?
(A) The measurement of maximal oxygen uptake (VO_2 max).
(B) The lactate threshold test.
(C) The 1-repetition maximum (1-RM) test.
(D) A body composition analysis.

152. Read the following statements and select the correct option.
Statement I : Concentric contraction is a type of muscle action where the muscle lengthens as it produces force.
Statement II : Eccentric contraction is a type of muscle action where the muscle shortens as it produces force.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

153. Read the assertion and reason carefully and select the correct option.
Assertion (A) : Immediately upon starting exercise, the ATP-PC system provides the bulk of energy for muscle contraction.
Reason (R) : The ATP-PC system can produce ATP at a very rapid rate, but its capacity is extremely limited, lasting only for a few seconds of maximal effort.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

154. What is the functional significance of the branching structure and intercalated discs of cardiac muscle fibers?
(A) They ensure that the heart muscle contracts as a coordinated unit (a functional syncytium).
(B) They allow the heart to be voluntarily controlled.
(C) They allow the heart to regenerate new cells rapidly after injury.
(D) They prevent the heart from beating too quickly.

155. Which of the following statements about muscular adaptations to endurance exercise is correct?
(A) A significant increase in the cross-sectional area and size of Type II fibers.
(B) A shift in fiber type characteristics from Type IIx towards Type IIa and Type I.

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(C) A decrease in mitochondrial density and aerobic enzyme activity within the cell.
(D) A decrease in the number of capillaries surrounding the individual muscle fibers.

156. Match the items in List I with List II and select the correct option.
List I : (Proprioceptor)
P. Muscle Spindle
Q. Golgi Tendon Organ
R. Joint Receptors (e.g., Pacinian corpuscles)
S. Cutaneous Receptors
List II : (Sensed Stimulus)
1. Muscle Tension
2. Touch, Pressure, Temperature
3. Muscle Length and rate of stretch
4. Joint position, acceleration
(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-1, S-3
(C) P-3, Q-1, R-4, S-2
(D) P-4, Q-2, R-3, S-1

157. The process of glycogenolysis is best described as the:
(A) Synthesis of glycogen from glucose.
(B) Breakdown of glycogen to glucose.
(C) Synthesis of glucose from non-carbohydrate sources.
(D) Breakdown of glucose into pyruvate.

158. Which of the following would NOT contribute to Excess Post-exercise Oxygen Consumption (EPOC)?
(A) Resynthesis of PCr in muscle.
(B) Lactate conversion to glucose.
(C) Restoration of muscle and blood oxygen stores.
(D) Initial oxygen deficit at the start of exercise.

159. Consider the following statements regarding the physiological aspects of fatigue:
(i) Peripheral fatigue refers to processes occurring within the muscle fiber itself.
(ii) Central fatigue originates in the CNS and can involve decreased neural drive to the muscle.
(iii) Glycogen depletion is a major factor in fatigue during prolonged, submaximal exercise.
(iv) Lactic acid itself, rather than the associated H+ ions, is the primary cause of fatigue.
(v) Accumulation of Pi (inorganic phosphate) can impair cross-bridge function.
Which of the above statement(s) is/are correct?
(A) (i), (ii), (iii), (iv) only
(B) (i), (ii), (iii), (v) only
(C) (i), (iii), (iv), (v) only
(D) (ii), (iii), (iv), (v) only

160. To acclimatize to performing in a hot environment, an athlete should:
(A) Train exclusively in a cold environment to shock the system.
(B) Progressively increase the duration and intensity of training in the heat over several days.
(C) Avoid all fluid intake during training in the heat.
(D) Wear heavy, non-breathable clothing during all training sessions.

161. A key physiological gender difference is that, on average, males have a lower resting heart rate and a higher stroke volume than females. This is primarily attributable to:
(A) Females having a higher level of cardiorespiratory fitness.
(B) Males having a larger average heart size.
(C) Females having a higher hemoglobin concentration.
(D) Males having a higher percentage of body fat.

162. Arrange the following events of excitation-contraction coupling in the correct chronological sequence:
(i) Action potential propagates along the sarcolemma and down the T-tubules.
(ii) Tropomyosin moves, exposing active sites on the actin filament.
(iii) Sarcoplasmic reticulum releases calcium ions (Ca^{2+}).
(iv) Myosin cross-bridges attach to actin and perform the power stroke.
Select the correct sequence:
(A) (i), (iii), (ii), (iv)
(B) (iii), (i), (iv), (ii)
(C) (i), (ii), (iii), (iv)
(D) (iv), (ii), (i), (iii)

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163. The physiological changes associated with aging can be attenuated by a healthy lifestyle. Which of the following is an example of this?
(A) A sedentary lifestyle can reverse sarcopenia.
(B) Regular resistance training can lessen the loss of muscle mass and strength.
(C) A high-fat diet can prevent arterial stiffening.
(D) Avoiding exercise preserves joint health more than moderate activity.

164. The primary goal of rehabilitation following an athletic injury is to:
(A) Ensure the athlete can return to competition as quickly as possible, regardless of healing status.
(B) Safely and effectively restore the function of the injured part to the greatest possible degree.
(C) Focus solely on pain management using medication.
(D) Prevent the athlete from ever participating in sports again.

165. The massage manipulation known as 'friction' is physiologically intended to:
(A) Gently soothe the skin surface.
(B) Increase general circulation over a large area.
(C) Break down adhesions and scar tissue in deeper tissues.
(D) Stimulate the muscles with rapid tapping motions.

166. Which of the following is a long-term cardiovascular adaptation to regular endurance exercise?
(A) An increase in resting heart rate.
(B) An increase in left ventricular muscle mass and chamber volume.
(C) A decrease in resting stroke volume.
(D) A decrease in total blood volume.

167. Which of the following accurately describes a characteristic of smooth muscle?
(A) It is under voluntary control and attached to the skeleton.
(B) It is non-striated and lines the walls of internal organs like the intestines.
(C) It is striated and found only in the heart.
(D) It contracts very rapidly and fatigues quickly.

168. The "sliding filament theory" explains muscle contraction as the result of:
(A) The muscle fibers themselves getting shorter and thicker.
(B) The actin and myosin filaments sliding past each other.
(C) Calcium ions physically pushing the filaments together.
(D) ATP causing the entire sarcomere to shrink.

169. What is the relationship between muscle fiber types and sports performance?
(A) Elite marathon runners tend to have a high percentage of Type IIx fibers.
(B) The proportion of fiber types can influence an individual's potential for success in certain types of events.
(C) Elite sprinters and weightlifters tend to have a high percentage of Type I fibers.
(D) Fiber type composition has no bearing on athletic performance.

170. Which of the following is a muscular adaptation to chronic resistance exercise?
(A) Decreased size of muscle fibers (atrophy).
(B) Increased number of mitochondria in fast-twitch fibers.
(C) Increased storage of intramuscular triglycerides.
(D) Increased synthesis of contractile proteins (actin and myosin), leading to hypertrophy.

171. The synapse between a motor neuron and a muscle fiber is called the:
(A) Axon hillock
(B) Neuromuscular junction
(C) Node of Ranvier
(D) Intercalated disc

172. The aerobic energy system is characterized by:
(A) Rapid but very limited ATP production.
(B) Production of lactic acid as a major byproduct.
(C) Slow but high-capacity ATP production using oxygen.
(D) Being the primary system for a 100m sprint.

173. What does the term "recovery oxygen" (or EPOC) represent?
(A) The amount of oxygen borrowed from hemoglobin at the start of exercise.

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(B) The elevated oxygen consumption required post-exercise to restore the body to its resting state.
(C) The total oxygen consumed during the exercise bout.
(D) The point at which oxygen supply equals oxygen demand during exercise.

174. Which of the following is a primary physiological effect of exercising in a high-altitude environment?
(A) Increased availability of oxygen in the air.
(B) Increased production of red blood cells after prolonged exposure.
(C) Decreased respiratory rate to conserve energy.
(D) A lower heart rate response for a given submaximal workload.

175. While absolute strength is typically greater in males, when strength is expressed relative to muscle cross-sectional area, the difference between males and females is:
(A) Virtually non-existent.
(B) Still very large.
(C) Reversed, with females being stronger.
(D) Only apparent in the lower body.

176. What is the primary physiological reason that regular weight-bearing exercise is recommended for healthful aging?
(A) It helps to slow down or prevent the loss of bone mineral density (osteoporosis).
(B) It primarily improves flexibility.
(C) It significantly increases maximal heart rate.
(D) It has no impact on metabolic health.

177. An athlete uses a transcutaneous electrical nerve stimulation (TENS) unit for pain control. What is the proposed physiological mechanism based on the "Gate Control Theory"?
(A) The electrical current cools the nerve, slowing conduction.
(B) The current stimulates large-diameter sensory nerves, which "closes the gate" to pain signals carried by smaller nerves.
(C) The current causes muscle contractions that pump out inflammatory fluids.
(D) The current destroys the pain-sensing nerve endings.

178. Which category of ergogenic aids includes substances like anabolic steroids and human growth hormone?
(A) Nutritional aids
(B) Pharmacological aids
(C) Physiological aids
(D) Mechanical aids

179. A massage therapist uses pétrissage on a cyclist's quadriceps. What is the intended physiological effect of this kneading and squeezing manipulation?
(A) To numb the surface of the skin.
(B) To "milk" the muscle of metabolic wastes and increase circulation.
(C) To rapidly stimulate the nervous system before a race.
(D) To lightly stroke the muscle to induce general relaxation.

180. The importance of exercise physiology in the field of physical education is that it:
(A) Provides a scientific rationale for curriculum design and teaching methods.
(B) Focuses only on the performance of elite athletes.
(C) Replaces the need for pedagogical knowledge.
(D) Deals exclusively with the psychological aspects of sport.

181. Which of the following statements correctly describes a short-term cardiorespiratory response to the initiation of exercise?
(A) Blood flow is shunted away from active skeletal muscles.
(B) Cardiac output increases to meet the heightened oxygen demand.
(C) Heart rate and stroke volume both decrease.
(D) The arteriovenous oxygen difference decreases.

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182. A major muscular adaptation to long-term endurance training is:
(A) A significant increase in the cross-sectional area of Type I fibers.
(B) An increase in the number and size of mitochondria within the muscle fibers.
(C) A decrease in the capillary density surrounding the muscle fibers.
(D) An increase in the activity of glycolytic

enzymes.

183. Consider the following statements about neural control of movement:
(i) A motor unit consists of a single muscle fiber and the motor neuron that innervates it.
(ii) The 'all-or-none' law applies to the contraction of a single motor unit.
(iii) Force gradation in a whole muscle is achieved by varying the number of motor units recruited.
(iv) Golgi Tendon Organs are primarily responsible for initiating a powerful muscle contraction.
Which of the above statement(s) is/are correct?
(A) (i) and (iv) only
(B) (ii) and (iii) only
(C) (i), (ii), and (iii) only
(D) (ii), (iii), and (iv) only

184. Read the following statements and select the correct option.
Statement I : The anaerobic energy systems (ATP-PC and Glycolysis) are capable of producing a large amount of ATP over a long duration.
Statement II : The aerobic energy system produces ATP more slowly but has a much larger capacity, making it ideal for endurance events.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

185. Read the assertion and reason carefully and select the correct option.
Assertion (A) : Active recovery (cool-down) at a low intensity following strenuous exercise can speed up the clearance of blood lactate.
Reason (R) : Light activity maintains elevated blood flow to the muscles, which enhances the transport of lactate to the liver and heart where it can be used for energy or converted to glucose.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

186. Which of the following is the most significant physiological problem for women athletes related to the "female athlete triad"?
(A) Irreversible loss of bone mineral density.
(B) Decreased flexibility
(C) Increased muscle mass
(D) Higher VO_2 max

187. Which of the following is NOT a typical physiological consequence of the aging process?
(A) Decreased nerve conduction velocity.
(B) Increased maximal aerobic capacity (VO_2 max).
(C) Reduced muscle strength and power.
(D) Increased stiffness of connective tissues.

188. Which of the following correctly pairs a therapeutic modality with its primary physiological mechanism?
(A) Thermotherapy : Vasoconstriction
(B) Cryotherapy : Vasodilation
(C) TENS : Pain modulation via Gate Control Theory
(D) Massage : Increased muscle spasticity

189. What is the fundamental difference between an ergogenic aid and a placebo?
(A) An ergogenic aid has a real physiological effect, while a placebo effect is based on belief.
(B) Ergogenic aids are always legal, whereas placebos are not.
(C) A placebo is a nutritional supplement, while an ergogenic aid is a drug.
(D) There is no difference; the terms are interchangeable.

190. Match the items in List I with List II and select the correct option.
List I : (Massage Manipulation)
P. Effleurage
Q. Pétrissage
R. Friction
S. Tapotement
List II : (Action)
1. Kneading/Squeezing
2. Percussion/Tapping
3. Gliding/Stroking
4. Deep rubbing/Circular pressure
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-1, R-4, S-2

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(C) P-2, Q-4, R-1, S-3
(D) P-4, Q-3, R-2, S-1

191. The contractile proteins of a muscle fiber are:
(A) Troponin and Tropomyosin
(B) Actin and Myosin
(C) Sarcolemma and Sarcoplasm
(D) Titin and Nebulin

192. Consider the following events that occur during a muscle contraction according to the sliding filament theory:
(i) The Z-lines move further apart.
(ii) The width of the A-band decreases.
(iii) The H-zone narrows or disappears.
(iv) Myosin heads form cross-bridges with actin.
(v) The length of the myofilaments themselves shortens.
Which of the above statements are correct?
(A) (i) and (ii) only
(B) (iii) and (iv) only
(C) (i), (ii), and (v) only
(D) (iii), (iv), and (v) only

193. A coach designs a training program where athletes perform high-intensity interval training (HIIT). Which muscular adaptation would be most expected from this type of training?
(A) A significant increase in myoglobin concentration.
(B) A conversion of Type II fibers to Type I fibers.
(C) An enhanced capacity of the anaerobic glycolytic system.
(D) A major increase in mitochondrial density.

194. Which of the following is the best example of a kinesthetic sense organ providing feedback for motor control?
(A) The eyes seeing the target in archery.
(B) The ears hearing the starter's pistol.
(C) A gymnast's muscle spindles and GTOs signaling body position during a balance beam routine.
(D) The skin feeling the wind during a run.

195. Chronologically sequence the primary energy systems that dominate from the start of an all-out exercise bout to 3 minutes of duration:
(i) Anaerobic Glycolysis
(ii) Aerobic Metabolism
(iii) ATP-PC System
Select the correct sequence:
(A) (i), (iii), (ii)
(B) (iii), (i), (ii)
(C) (ii), (i), (iii)
(D) (iii), (ii), (i)

196. The main reason an active cool-down is beneficial for recovery is that it:
(A) Prevents blood from pooling in the extremities and facilitates lactate clearance.
(B) Immediately replenishes all glycogen stores.
(C) Causes a rapid drop in body temperature, which can be dangerous.
(D) Increases muscle soreness for the next day.

197. The body's "thermostat," which regulates core temperature by initiating responses like sweating or shivering, is located in which part of the brain?
(A) Cerebellum
(B) Hypothalamus
(C) Cerebral Cortex
(D) Medulla Oblongata

198. The term 'amenorrhea' in the context of the female athlete triad refers to:
(A) The onset of the first menstrual period.
(B) The absence or cessation of normal menstrual function.
(C) Painful or difficult menstruation.
(D) Low bone mineral density.

199. Lifestyle management for healthful aging focuses on maintaining functional ability. Which type of exercise is most critical for preserving the ability to perform activities of daily living, like climbing stairs or carrying groceries?
(A) Flexibility training
(B) Resistance training
(C) High-intensity sprinting
(D) Meditation

200. The immediate application of cryotherapy (ice) to an acute injury is effective in controlling secondary hypoxic injury by:
(A) Increasing blood flow to bring more oxygen to the area.
(B) Decreasing the metabolic rate of the surrounding cells, thus reducing their need for oxygen.

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(C) Heating the tissues to speed up enzymatic reactions.
(D) Causing a massive inflammatory response.

201. Which of the following is a physiological ergogenic aid?
(A) Caffeine
(B) Blood doping
(C) A lighter pair of running shoes
(D) Anabolic steroids

202. Which of the following statements about exercise physiology is incorrect?
(A) It explains how exercise can be used in treating and preventing chronic diseases.
(B) It helps in understanding human adaptation to various environmental stresses.
(C) Its scope is limited only to the study of professional athletes.
(D) It provides a basis for creating safe and effective exercise prescriptions for diverse populations.

203. During an acute bout of exercise, the Frank-Starling mechanism helps to increase stroke volume. How does this mechanism work?
(A) By decreasing the contractility of the heart muscle.
(B) By increasing end-diastolic volume, which leads to a more forceful contraction.
(C) By increasing the heart rate via sympathetic stimulation.
(D) By causing vasoconstriction of the coronary arteries.

204. Which of the following is a characteristic of skeletal muscle tissue?
(A) It is autorhythmic.
(B) It is non-striated.
(C) It is under voluntary control.
(D) It has intercalated discs.

205. The specific event that triggers the release of calcium from the sarcoplasmic reticulum is:
(A) The binding of ATP to the myosin head.
(B) The arrival of an action potential at the T-tubules.
(C) The detachment of the myosin head from actin.
(D) The breakdown of acetylcholine in the synaptic cleft.

206. If a sport requires sustained, powerful, repeated movements, such as in middle-distance running (800m-1500m) or swimming (200m-400m), an athlete with a higher proportion of which fiber type would likely have a natural advantage?
(A) Type I
(B) Type IIa
(C) Type IIx
(D) Smooth muscle fibers

207. A novice begins a weight training program. The majority of their strength gains in the first 4-6 weeks are attributable to:
(A) Neural adaptations.
(B) Muscular hypertrophy.
(C) Muscular hyperplasia.
(D) Increased muscle glycogen storage.

208. During maximal, short-duration exercise (e.g., 30-second Wingate test), the accumulation of which substance is most associated with the onset of fatigue?
(A) Free fatty acids
(B) Hydrogen ions ($H+$) from lactate production
(C) Creatine phosphate
(D) Oxygen

209. The measurement of heat production by the body is known as:
(A) Indirect calorimetry
(B) Direct calorimetry
(C) Spirometry
(D) Ergometry

210. Which of the following contributes to the "slow component" of EPOC?
(A) Replenishing ATP-PC stores.
(B) Re-oxygenating myoglobin.
(C) Elevated body temperature and circulating hormones.
(D) The initial oxygen deficit.

211. Which nutritional component is most critical for the resynthesis of muscle glycogen stores after prolonged exercise?
(A) Protein
(B) Fat
(C) Vitamins
(D) Carbohydrate

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212. What is the body's first response to maintain core temperature when exposed to a cold environment?
(A) Sweating
(B) Peripheral vasoconstriction
(C) Peripheral vasodilation
(D) Decreased metabolic rate

213. While females generally have a lower VO_2 max than males in absolute terms, how does this difference change when expressed relative to lean body mass?
(A) The difference becomes even larger.
(B) The difference is significantly reduced.
(C) The difference is eliminated completely.
(D) The difference is reversed.

214. Which of the following is NOT a component of the female athlete triad?
(A) Low energy availability (with or without an eating disorder)
(B) Menstrual dysfunction (amenorrhea)
(C) Low bone mineral density (osteoporosis)
(D) Iron-deficiency anemia

215. A primary focus of lifestyle management for healthful aging is the prevention of falls. Which type of training is most effective for improving balance and reducing fall risk?
(A) Heavy 1-RM lifting
(B) Training that challenges proprioception and includes dynamic movements.
(C) Seated cycling only.
(D) Long-duration, low-intensity running.

216. A physical therapist applies a hot pack to a patient's lower back before stretching. The intended physiological response is:
(A) Decreased blood flow and tissue stiffness.
(B) Numbing of the area through cold.
(C) Increased tissue temperature and extensibility.
(D) A strong muscle contraction.

217. A proposed mechanism for the ergogenic effect of beta-alanine supplementation is:
(A) Directly stimulating the central nervous system like caffeine.
(B) Increasing the muscle's carnosine content, which enhances its buffering capacity.
(C) Increasing red blood cell count.
(D) Providing a direct source of energy for muscle contraction.

218. A massage therapist concludes a session with long flowing strokes of effleurage. The physiological purpose is to:
(A) Break up deep scar tissue.
(B) Soothe the nervous system and enhance fluid return.
(C) Vigorously stimulate the muscles for activity.
(D) Apply focused pressure on trigger points.

219. Which of the following best exemplifies the application of exercise physiology in sports?
(A) A coach deciding on a team's offensive strategy.
(B) A physical education teacher developing a fitness unit based on the principle of progressive overload.
(C) An athletic director scheduling game times.
(D) A sports psychologist teaching visualization techniques.

220. Read the following statements and select the correct option.
Statement I : During prolonged steady-state exercise, cardiac output is maintained by a gradual increase in heart rate to compensate for a decrease in stroke volume.
Statement II : This phenomenon, known as cardiovascular drift, is primarily caused by dehydration and a shift of fluid from the plasma to the tissues.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

221. Read the assertion and reason carefully and select the correct option.
Assertion (A) : Regular endurance exercise results in an increased mitochondrial density in skeletal muscle.
Reason (R) : Increased mitochondrial density improves the muscle's capacity to produce ATP via anaerobic glycolysis.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.

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(C) A is true but R is false.
(D) A is false but R is true.

222. The ability of a muscle to be stretched or extended beyond its resting length is known as:
(A) Elasticity
(B) Contractility
(C) Excitability
(D) Extensibility

223. What role does calcium play in muscle contraction?
(A) It provides the energy for the power stroke.
(B) It is the neurotransmitter that crosses the synaptic cleft.
(C) It binds to troponin, causing tropomyosin to shift and expose the actin binding sites.
(D) It breaks down acetylcholine to terminate the contraction.

224. Consider the following characteristics:
(i) Large motor neuron size
(ii) Fast-glycolytic
(iii) High force production
(iv) Low fatigue resistance
(v) White in color
Which of the above statement(s) are correct regarding Type IIx (or IIb) muscle fibers?
(A) Type I
(B) Type IIx (or IIb)
(C) Type IIa
(D) Cardiac

225. A key muscular adaptation to endurance training is an increase in myoglobin content. What is the functional benefit of this adaptation?
(A) It increases the muscle's capacity to store glycogen.
(B) It enhances the muscle's ability to store and transport oxygen from the cell membrane to the mitochondria.
(C) It increases the speed of muscle contraction.
(D) It increases the size of the muscle fibers.

226. What is the primary function of the myelin sheath that surrounds many nerve axons?
(A) To store neurotransmitters.
(B) To increase the speed of nerve impulse transmission.
(C) To act as a receptor for chemical signals.
(D) To slow down nerve impulses for better control.

227. The point during incremental exercise at which blood lactate begins to accumulate above resting levels is referred to as the:
(A) VO_2 max
(B) Lactate threshold
(C) Oxygen deficit
(D) Respiratory compensation point

228. The restoration of phosphocreatine (PCr) stores after intense exercise is an aerobic process that occurs during:
(A) The exercise bout itself.
(B) The recovery period (EPOC).
(C) The 24 hours following exercise.
(D) The warm-up for the next exercise session.

229. Match the items in List I with List II and select the correct option.
List I : (Environmental Condition)
P. High Altitude
Q. Hot, Humid Environment
R. Cold Environment
S. High Air Pollution
List II : (Primary Physiological Challenge)
1. Impaired thermoregulation and risk of hyperthermia
2. Risk of hypothermia and frostbite
3. Hypoxia (reduced oxygen availability)
4. Respiratory irritation and impaired gas exchange
(A) P-3, Q-1, R-2, S-4
(B) P-1, Q-3, R-4, S-2
(C) P-3, Q-2, R-1, S-4
(D) P-2, Q-4, R-3, S-1

230. Despite physiological differences, why is it inappropriate to exclude women from strenuous sports based on gender alone?
(A) Because women have superior trainability.
(B) Because there is a wide range of individual variability in performance within each gender.
(C) Because women do not experience fatigue.
(D) Because there are no physiological differences between genders.

231. The combination of age-related loss of muscle mass (sarcopenia) and an increase in fat mass is known as:

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(A) Osteoporosis
(B) Sarcopenic obesity
(C) Frailty
(D) Dynapenia

232. Which of the following correctly describes a physiological response to the application of a therapeutic modality?
(A) Ultrasound uses sound waves to cool tissue.
(B) Thermotherapy increases local metabolic rate.
(C) Cryotherapy causes vasodilation to reduce swelling.
(D) Electrical stimulation is used to decrease muscle strength.

233. Human Growth Hormone (HGH) is considered a pharmacological ergogenic aid because it can:
(A) Increase fat storage for endurance events.
(B) Stimulate muscle and bone growth.
(C) Act as a painkiller.
(D) Improve the blood's buffering capacity.

234. The primary goal of using tapotement (percussion) in a pre-event massage is to:
(A) Induce deep relaxation and sleepiness.
(B) Break down deep fibrous adhesions.
(C) Stimulate the muscles and nervous system, increasing local blood flow.
(D) Stretch the muscle fibers to their maximum length.

235. An increase in the a-vO_2 difference during exercise reflects:
(A) The heart is pumping less blood.
(B) The lungs are taking in less oxygen.
(C) The muscles are extracting more oxygen from the blood that passes through them.
(D) The blood is returning to the heart with a higher oxygen content.

236. Which statement provides the best physiological explanation for resting bradycardia in endurance-trained athletes?
(A) A decrease in heart size and contractility.
(B) An increase in stroke volume allows the heart to deliver the same cardiac output with fewer beats.
(C) A chronic elevation of sympathetic nervous system activity.
(D) A decrease in total blood volume.

237. Which of these structures contains the contractile elements (actin and myosin) of the muscle cell?
(A) Sarcolemma
(B) Sarcoplasmic Reticulum
(C) Myofibril
(D) T-tubule

238. In a state of fatigue, the accumulation of inorganic phosphate (Pi) from the breakdown of ATP and PCr can impair performance by:
(A) Directly interfering with Ca^{2+} release from the sarcoplasmic reticulum.
(B) Increasing the speed of the cross-bridge cycle.
(C) Enhancing the sensitivity of troponin to calcium.
(D) Stimulating the central nervous system.

239. A track athlete runs a 1500m race. Their energy is supplied by a blend of systems, but which system becomes increasingly dominant after the first 1-2 minutes?
(A) ATP-PC System
(B) Aerobic System
(C) Anaerobic Glycolysis
(D) The phosphagen system

240. The recovery of muscle glycogen stores is most rapid when:
(A) Only fats are consumed post-exercise.
(B) Carbohydrates are consumed within the first hour after exercise.
(C) No food is consumed for at least 6 hours post-exercise.
(D) Only protein is consumed post-exercise.

241. When considering the physiological consequences of aging, 'dynapenia' refers specifically to the age-related loss of:
(A) Muscle mass
(B) Bone density
(C) Muscle strength and power
(D) Aerobic capacity

242. In rehabilitation, which modality uses high-frequency sound waves to generate heat and promote healing in deep tissues?
(A) TENS
(B) Cryotherapy
(C) Infrared Lamp

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(D) Therapeutic Ultrasound

243. The primary physiological reason for the performance-enhancing effect of EPO (Erythropoietin) is that it:
(A) Stimulates the bone marrow to produce more red blood cells.
(B) Increases muscle fiber size.
(C) Acts as a central nervous system stimulant.
(D) Buffers acid in the muscles.

244. What is the primary difference between a concentric and an eccentric muscle contraction?
(A) Concentric involves no change in muscle length, while eccentric does.
(B) Concentric involves the muscle shortening, while eccentric involves the muscle lengthening under tension.
(C) Concentric is voluntary, while eccentric is involuntary.
(D) Concentric uses ATP, while eccentric does not.

245. Consider the following statements regarding the importance and scope of exercise physiology:
(i) It helps understand the body's response to the stress of exercise.
(ii) It forms the scientific basis for athletic training and conditioning.
(iii) It is crucial for prescribing exercise for health, wellness, and disease prevention.
(iv) Its application is restricted to laboratory settings and has no practical value.
(v)It helps explain adaptations to environmental factors like heat and altitude.
Which of the above statement(s) is/are correct?
(A) (i), (ii), (iv), (v) only
(B) (i), (ii), (iii), (v) only
(C) (ii), (iii), (iv), (v) only
(D) (i), (iii), (iv), (v) only

246. What is the role of the T-tubules in muscle contraction?
(A) To store and release calcium ions.
(B) To form the cross-bridges between actin and myosin.
(C) To rapidly transmit the action potential from the sarcolemma to the interior of the muscle fiber.
(D) To synthesize ATP for the power stroke.

247. The ability of the nervous system to vary muscle force is accomplished through:
(A) Only changing the type of neurotransmitter released.
(B) A combination of motor unit recruitment and firing rate frequency.
(C) The 'all-or-none' principle of the entire muscle.
(D) Activating sensory nerves instead of motor nerves.

248. During the final kick of a 5k race, a runner's RER value exceeds 1.0. What does this indicate?
(A) The runner is exclusively using fat for fuel.
(B) The runner is relying heavily on anaerobic glycolysis, and excess CO_2 is being produced from the buffering of lactic acid.
(C) The runner is experiencing a technical malfunction with the measurement equipment.
(D) The runner has reached a state of complete rest.

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249. Which of the following is an example of applying knowledge of exercise physiology to healthful aging?
(A) Prescribing weight-bearing exercise to counteract osteoporosis.
(B) Recommending a sedentary lifestyle to preserve bone density.
(C) Encouraging smoking to improve lung capacity.
(D) Advising a high-sugar diet for metabolic health.

250. The physiological response to the massage manipulation 'effleurage' is primarily:
(A) Increased superficial circulation and the promotion of relaxation.
(B) Increased muscular tension and neuromuscular stimulation.
(C) Breakdown of deep scar tissue and fibrous adhesions.
(D) Rapid firing and activation of the muscle spindle units.

Direction : Please read the following source carefully.

Exercise physiology is a specialized field that investigates the body's acute and chronic responses to physical activity. Its scope within physical

education and sports is extensive, providing the scientific foundation for training methodologies. It explains how the human body, from the cellular to the systemic level, adapts to the stress of exercise. This understanding is crucial for designing effective training programs that target specific physiological outcomes, such as improved cardiovascular endurance or muscular strength. The importance of exercise physiology lies in its ability to optimize performance, prevent injuries, and promote health and wellness. By analyzing physiological parameters, coaches and educators can tailor interventions to individual athletes, monitor training load, and facilitate efficient recovery. Furthermore, it clarifies the mechanisms behind fatigue, the role of different energy systems, and the adaptations that occur with consistent training, thereby moving the practice of physical education and sports from a trial-and-error approach to a science-based profession. This discipline is fundamental for understanding how to maximize athletic potential and ensure long-term athlete development safely and effectively.
Based on the above source, attempt the following five questions.

251. According to the passage, what is the primary role of exercise physiology in physical education?
(A) To provide historical context for various sports.
(B) To offer a scientific foundation for training methodologies.
(C) To establish the administrative rules for athletic competitions.
(D) To focus exclusively on the rehabilitation of sports injuries.

252. The application of exercise physiology principles allows coaches and educators to:
(A) tailor interventions and monitor training load for individuals.
(B) solely focus on the psychological aspects of performance.
(C) design generalized training programs for all athletes.
(D) create uniform recovery strategies regardless of the sport.

253. It can be inferred from the passage that the integration of exercise physiology into sports has led to:
(A) a decline in the importance of coaching intuition.
(B) a shift from a science-based to a trial-and-error approach.
(C) the professionalization of physical education through a scientific basis.
(D) an increased emphasis on competition over athlete well-being.

254. The scope of exercise physiology, as described in the text, encompasses the study of:
(A) only the long-term, chronic adaptations to exercise.
(B) only the immediate, acute responses to physical activity.
(C) sociological and economic factors in sports participation.
(D) both acute and chronic physiological responses to exercise.

255. Understanding physiological parameters through exercise physiology is presented as fundamental for:
(A) maximizing an athlete's commercial endorsements.
(B) standardizing equipment and facilities for all sports.
(C) ensuring safe and effective long-term athlete development.
(D) increasing the entertainment value of sporting events.

Direction : Please read the following source carefully.

Long-term engagement in physical activities, particularly endurance-based exercises, elicits significant cardio-respiratory adaptations. These chronic adaptations are fundamental to improved athletic performance and overall cardiovascular health. At the heart level, one of the most notable changes is cardiac hypertrophy, specifically an increase in the left ventricular volume and wall thickness, which enhances stroke volume both at rest and during maximal exercise. Consequently, a trained individual often exhibits a lower resting heart rate (bradycardia) because the heart pumps more blood with each beat. The vascular system adapts by increasing capillary density in the muscles, which improves oxygen extraction from the blood. Furthermore, there is an increase in total blood volume and red blood cell count,

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enhancing the blood's oxygen-carrying capacity. Respiratory adaptations, while generally less pronounced than cardiovascular ones, include increased maximal ventilation capacity and improved efficiency of respiratory muscles. These combined adaptations result in a higher maximal oxygen uptake (VO_2 max), the gold standard measure of aerobic fitness, allowing an athlete to sustain a higher intensity of exercise for a longer duration before the onset of fatigue.

Based on the above source, attempt the following five questions.

256. Which of the following is identified as a significant cardiac adaptation to long-term endurance exercise?
(A) A decrease in left ventricular volume.
(B) The development of cardiac hypertrophy.
(C) An increase in resting heart rate.
(D) A reduction in overall stroke volume.

257. The passage explains that bradycardia in trained individuals is a direct consequence of:
(A) reduced efficiency of the respiratory muscles.
(B) a decrease in total blood volume.
(C) a lower density of capillaries in the muscles.
(D) an enhanced stroke volume of the heart.

258. According to the text, what is the primary benefit of increased capillary density in muscles?
(A) Improved extraction of oxygen from the blood.
(B) Enhanced transmission of nerve impulses.
(C) Increased storage of glycogen within the muscle.
(D) A more rapid heart rate response to exercise.

259. Based on the passage, the culminating effect of the described cardio-respiratory adaptations is:
(A) a lower tolerance for high-intensity exercise.
(B) a more pronounced response to short-term anaerobic activity.
(C) a significant increase in maximal oxygen uptake (VO_2 max).
(D) a reduction in the oxygen-carrying capacity of the blood.

260. Which respiratory adaptation is mentioned as resulting from long-term physical activity?
(A) Increased maximal ventilation capacity.
(B) Decreased efficiency of respiratory muscles.
(C) A reduction in maximal ventilation capacity.
(D) A smaller total lung volume.

Direction : Please read the following source carefully.

The microscopic structure of a muscle fibre is intricately designed for contraction. Each fibre is composed of numerous myofibrils, which in turn consist of repeating functional units called sarcomeres. Within each sarcomere are two primary types of myofilaments: thick filaments, composed mainly of the protein myosin, and thin filaments, composed primarily of the protein actin. The Sliding Filament Theory of muscular contraction explains how these filaments interact to generate force. The theory posits that contraction is not the result of the filaments themselves shortening, but rather of them sliding past one another. This process is initiated by a nerve impulse that triggers the release of calcium ions within the muscle cell. Calcium binds to troponin on the actin filament, causing a conformational change in tropomyosin, which exposes the active binding sites on actin. The myosin heads, energised by the hydrolysis of ATP, can then attach to these exposed sites, forming cross-bridges. The myosin heads execute a "power stroke," pulling the actin filaments towards the center of the sarcomere. This cycle of attachment, pulling, and detachment continues as long as calcium and ATP are present, causing the sarcomere to shorten and the muscle to contract.

Based on the above source, attempt the following five questions.

261. What does the passage identify as the repeating functional unit of a myofibril?
(A) The myofilament.
(B) The myosin head.
(C) The muscle fibre.
(D) The sarcomere.

262. According to the Sliding Filament Theory, muscular contraction occurs when:
(A) actin and myosin filaments shorten in length.
(B) actin filaments slide past the myosin filaments.
(C) the entire muscle fibre increases in diameter.
(D) calcium ions are pumped out of the muscle

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cell.

263. What is the immediate role of calcium ions in initiating muscle contraction as described in the text?
(A) To provide energy for the myosin power stroke.
(B) To directly cause the actin filaments to slide.
(C) To bind with troponin and expose actin's active sites.
(D) To break the cross-bridges between actin and myosin.

264. The thick filaments within a sarcomere are composed mainly of which protein?
(A) Actin.
(B) Troponin.
(C) Tropomyosin.
(D) Myosin.

265. The "power stroke" that pulls the thin filaments toward the center of the sarcomere is executed by the:
(A) myosin heads.
(B) troponin complex.
(C) actin filament itself.
(D) calcium ions.

Direction : Please read the following source carefully.

Skeletal muscle is not a homogenous tissue; it is composed of different types of muscle fibres, which are broadly classified based on their contractile and metabolic characteristics. The two primary categories are Type I (slow-twitch) and Type II (fast-twitch) fibres, with Type II fibres further subdivided (e.g., Type IIa and Type IIb/IIx). Type I fibres are characterized by high aerobic capacity, a rich capillary supply, and a high concentration of myoglobin and mitochondria. These attributes make them highly resistant to fatigue and ideally suited for prolonged, low-intensity activities such as marathon running and long-distance cycling. Conversely, Type II fibres contract rapidly and generate high levels of force, but they fatigue quickly due to their reliance on anaerobic metabolism. Type IIb/IIx fibres represent the fastest and most powerful type, crucial for explosive, short-duration events like sprinting and weightlifting. Type IIa fibres have intermediate properties, possessing both aerobic and anaerobic capabilities, making them important for events requiring sustained power, such as a 400-meter or 800-meter run. An individual's fibre type composition is largely genetically determined, but training can induce some adaptations, thereby influencing an athlete's potential in different sports.

Based on the above source, attempt the following five questions.

266. Based on the characteristics described, which muscle fibre type would be most dominant in an elite marathon runner?
(A) Type IIb/IIx fibres.
(B) Type I fibres.
(C) Type IIa fibres.
(D) Intermediate fibres with low aerobic capacity.

267. A primary characteristic of Type IIb/IIx muscle fibres is their ability to:
(A) resist fatigue over very long durations.
(B) generate high levels of force rapidly.
(C) contract slowly with low force output.
(D) rely primarily on aerobic metabolism for energy.

268. The high fatigue resistance of Type I fibres is attributed to their:
(A) high aerobic capacity and rich capillary supply.
(B) reliance on anaerobic metabolism.
(C) low concentration of mitochondria.
(D) rapid contraction speed.

269. An athlete competing in a 400-meter sprint would likely rely heavily on which fibre type for sustained power?
(A) Type I fibres, due to their fatigue resistance.
(B) Type IIb/IIx fibres exclusively, for initial speed.
(C) Type IIa fibres, due to their intermediate properties.
(D) A combination that excludes any fast-twitch capabilities.

270. What does the passage suggest about an individual's muscle fibre type composition?
(A) It can be completely changed from one type to another through training.
(B) It has no bearing on an individual's

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suitability for a particular sport.
(C) It is determined solely by an individual's diet and lifestyle choices.
(D) It is primarily determined by genetics but can be adapted through training.

Direction : Please read the following source carefully.

The functional connection between a motor neuron and a muscle fibre occurs at a specialized site known as the neuro-muscular junction. The transmission of a nerve impulse across this junction is a critical step in initiating muscular contraction. When an electrical signal, or action potential, travels down the motor neuron and reaches the axon terminal, it triggers the release of a neurotransmitter called acetylcholine (ACh) into the synaptic cleft. ACh then diffuses across the cleft and binds to specific receptors on the sarcolemma of the muscle fibre. This binding opens ion channels, allowing sodium ions to rush into the muscle cell, which depolarizes the membrane and generates an action potential in the muscle fibre itself. This electrical signal then propagates along the sarcolemma, leading to muscle contraction. Concurrently, the neural control of motor skills relies on continuous feedback from kinesthetic sense organs, such as muscle spindles and Golgi tendon organs. These proprioceptors provide the central nervous system with real-time information about muscle length, tension, and joint position, allowing for the precise coordination, adjustment, and refinement of movement.

Based on the above source, attempt the following five questions.

271. What is the name of the specialized site where a motor neuron connects with a muscle fibre?
(A) Synaptic cleft.
(B) Sarcolemma.
(C) Neuro-muscular junction.
(D) Axon terminal.

272. The transmission of a nerve impulse across the synaptic cleft is primarily mediated by which neurotransmitter?
(A) Dopamine.
(B) Acetylcholine.
(C) Serotonin.
(D) Noradrenaline.

273. The binding of acetylcholine to its receptors on the sarcolemma directly causes:
(A) the release of calcium from the sarcoplasmic reticulum.
(B) the muscle spindles to send signals to the CNS.
(C) the immediate relaxation of the muscle fibre.
(D) the opening of ion channels and influx of sodium ions.

274. Kinesthetic sense organs, such as muscle spindles, are crucial for the neural control of motor skills because they:
(A) provide sensory feedback about muscle status to the CNS.
(B) generate the initial nerve impulse for contraction.
(C) release acetylcholine into the synaptic cleft.
(D) form the structural connection at the neuro-muscular junction.

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275. One can infer that a disruption in the function of Golgi tendon organs would most likely impair an athlete's ability to:
(A) generate a muscle action potential.
(B) transmit a nerve impulse down the motor neuron.
(C) regulate muscle tension and prevent injury.
(D) release acetylcholine from the axon terminal.

Direction : Please read the following source carefully.

The bio-chemical aspects of exercise are centered on the metabolism of food products to provide energy for muscular work. The body utilizes two primary metabolic pathways to regenerate ATP (adenosine triphosphate), the immediate energy currency: the anaerobic system and the aerobic system. The anaerobic system operates without the presence of oxygen and is the dominant energy source during high-intensity, short-duration activities. It includes the ATP-PC system, which provides immediate energy for a few seconds, and anaerobic glycolysis, which breaks down glucose or glycogen to lactate, supplying energy for activities lasting up to a few minutes. The aerobic system, in contrast, requires oxygen and is the primary energy provider during rest and for prolonged, low-to-moderate intensity exercise.

This system metabolizes carbohydrates, fats, and, to a lesser extent, proteins within the mitochondria to produce a large amount of ATP. The energy cost of exercise can be measured through direct or indirect methods. Direct calorimetry measures the actual heat produced by the body, while indirect calorimetry, a more common method, estimates energy expenditure by measuring oxygen consumption (VO_2) and carbon dioxide production (VCO_2), based on the principle that oxygen uptake is directly proportional to energy use.

Based on the above source, attempt the following five questions.

276. Which energy system is dominant during a 100-meter sprint, a high-intensity, short-duration event?
(A) The anaerobic system.
(B) The aerobic system.
(C) The protein metabolism pathway.
(D) The fat oxidation system.

277. The aerobic energy system is characterized by its:
(A) operation in the absence of oxygen.
(B) primary reliance on the ATP-PC pathway.
(C) production of lactate as a primary byproduct.
(D) use of oxygen to metabolize fuel sources.

278. Indirect calorimetry estimates the energy cost of exercise by measuring:
(A) the total heat produced by the body.
(B) oxygen consumption and carbon dioxide production.
(C) the amount of ATP stored in the muscles.
(D) the athlete's core body temperature.

279. According to the passage, the primary energy provider for the body during a state of rest is the:
(A) ATP-PC system.
(B) anaerobic glycolysis system.
(C) aerobic system.
(D) lactate-producing system.

280. The fundamental difference between direct and indirect calorimetry is that direct calorimetry measures:
(A) gas exchange, whereas indirect calorimetry measures heat.
(B) heart rate, whereas indirect calorimetry measures respiratory rate.
(C) muscle lactate, whereas indirect calorimetry measures blood glucose.
(D) heat production, whereas indirect calorimetry estimates energy from gas exchange.

Direction : Please read the following source carefully.

The recovery process following exercise involves a complex series of physiological events aimed at restoring homeostasis. A key concept in this process is fatigue, which can be defined as a reversible, exercise-induced reduction in the ability to produce force. Its physiological aspects are multifaceted, involving factors such as the depletion of energy substrates like muscle glycogen, the accumulation of metabolic by-products such as hydrogen ions, and neuro-muscular fatigue. A crucial part of recovery is the restoration of energy stores, primarily the resynthesis of phosphocreatine (PCr) and muscle glycogen. PCr restoration is rapid, occurring mostly within minutes post-exercise, whereas glycogen replenishment is a much slower process, potentially taking 24 to 48 hours, and is highly dependent on post-exercise carbohydrate intake. Another vital component is recovery oxygen, often referred to as excess post-exercise oxygen consumption (EPOC). This is the elevated oxygen uptake that occurs after exercise has ceased. The EPOC serves multiple purposes, including restoring ATP and PCr stores, metabolizing lactate, replenishing myoglobin with oxygen, and supporting the elevated metabolic rate associated with increased body temperature and circulating hormones. Effective management of this recovery phase is critical for subsequent performance.

Based on the above source, attempt the following five questions.

281. Which of the following is described as a physiological aspect contributing to fatigue?
(A) The accumulation of metabolic by-products.
(B) The overproduction of muscle glycogen.
(C) An increase in phosphocreatine stores.
(D) A decrease in circulating hormones.

282. The restoration of which energy store is described as a slow process that can take up to 48 hours?

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(A) Adenosine triphosphate (ATP).
(B) Muscle glycogen.
(C) Phosphocreatine (PCr).
(D) Myoglobin oxygen.

283. Excess post-exercise oxygen consumption (EPOC) is defined as the:
(A) maximum oxygen an athlete can consume during exercise.
(B) elevated oxygen uptake that continues after exercise ends.
(C) oxygen used exclusively for metabolizing fat stores.
(D) point at which oxygen supply fails to meet demand.

284. According to the passage, one of the functions of recovery oxygen (EPOC) is to:
(A) aid in the restoration of ATP and PCr stores.
(B) immediately reduce the body's core temperature to resting levels.
(C) prevent the intake of carbohydrates post-exercise.
(D) decrease the overall metabolic rate of the body.

285. The passage implies that an effective nutritional strategy for accelerating recovery would involve:
(A) avoiding all food intake for several hours post-exercise.
(B) limiting fluid intake to concentrate energy stores.
(C) consuming adequate carbohydrates after exercise.
(D) focusing on protein intake to the exclusion of other nutrients.

Direction : Please read the following source carefully.

Human physiology during exercise is significantly affected by environmental factors, which can impose additional stress on the body and influence performance. Exercising in hot and humid conditions presents a major challenge to thermoregulation. The body's primary mechanism for heat dissipation is the evaporation of sweat. However, high humidity impairs this process, increasing the risk of heat-related illnesses like heat exhaustion and heatstroke. Physiological responses include a higher heart rate at any given workload (cardiovascular drift) and increased sweat rates, leading to dehydration if fluids are not adequately replaced. Conversely, exercising at high altitude exposes the body to a lower partial pressure of oxygen (hypoxia). The immediate response includes an increase in breathing rate and heart rate to compensate for the reduced oxygen availability. Performance in aerobic events is typically impaired. Over time, with acclimatization, the body adapts by increasing the production of red blood cells and hemoglobin, thereby enhancing the blood's oxygen-carrying capacity. Understanding these environmental influences is critical for athletes to prepare for competition, implement acclimatization strategies, and take necessary precautions, such as proper hydration or altitude training, to mitigate performance decrements and health risks.

Based on the above source, attempt the following five questions.

286. According to the passage, what is the primary challenge to the body when exercising in a hot and humid environment?
(A) A reduced stimulus for sweating.
(B) A significant decrease in core body temperature.
(C) An over-efficient thermoregulation system.
(D) An impaired ability to dissipate heat through evaporation.

287. The immediate physiological response to exercising at high altitude includes an increase in:
(A) red blood cell production.
(B) the partial pressure of oxygen.
(C) breathing rate and heart rate.
(D) aerobic performance capacity.

NODIA

288. A long-term adaptation to high altitude, known as acclimatization, involves:
(A) a decrease in the blood's oxygen-carrying capacity.
(B) an increase in red blood cell and hemoglobin production.
(C) a reduced heart rate response to exercise.
(D) a lower resting breathing rate compared to sea level.

289. The term "cardiovascular drift," as mentioned in the context of exercising in the heat, refers to:
(A) a progressive decrease in heart rate during

prolonged exercise.
(B) an improvement in thermoregulatory efficiency.
(C) a shift in blood flow away from the skin.
(D) a higher heart rate at a given workload.

290. The passage suggests that an athlete preparing for a competition in a hot climate should prioritize:
(A) implementing strategies for proper hydration.
(B) limiting their training to avoid sweating.
(C) consuming a high-fat diet to increase insulation.
(D) avoiding any form of acclimatization to the heat.

Direction : Please read the following source carefully.

The participation of women in sports has highlighted several unique physiological considerations. Regarding trainability, evidence indicates that women exhibit similar relative improvements in strength and aerobic capacity as men in response to comparable training programs. However, absolute physiological gender differences do exist. On average, men tend to have larger hearts, greater blood volume, and higher hemoglobin concentrations, contributing to a higher maximal oxygen uptake (VO_2 max). Men also typically possess greater muscle mass and lower body fat percentages, which translates to an advantage in sports requiring absolute strength and power. Beyond these performance metrics, there are special problems that can affect women athletes. These include a higher incidence of certain musculoskeletal injuries, such as anterior cruciate ligament (ACL) tears, and conditions related to the 'female athlete triad'—a syndrome encompassing disordered eating, amenorrhea (absence of menstruation), and osteoporosis (low bone density). Understanding these differences and special problems is crucial for coaches and sports medicine professionals to design safe and effective training regimens, implement injury prevention strategies, and provide appropriate health monitoring for women athletes, ensuring their long-term health and performance.

Based on the above source, attempt the following five questions.

291. In terms of trainability, the passage suggests that women, in response to training, show:
(A) significantly lower relative improvements in aerobic capacity than men.
(B) greater absolute gains in strength compared to men.
(C) similar relative improvements in strength and aerobic capacity as men.
(D) no significant improvement in maximal oxygen uptake.

292. Which physiological factor is mentioned as contributing to men's higher average VO_2 max?
(A) Greater blood volume and hemoglobin concentration.
(B) Lower percentage of muscle mass.
(C) Smaller heart size.
(D) A higher incidence of ACL injuries.

293. The "female athlete triad" is a syndrome that includes which of the following components?
(A) Increased muscle mass, high bone density, and regular menstruation.
(B) High VO_2 max, low body fat, and amenorrhea.
(C) Cardiovascular disease, disordered eating, and high blood pressure.
(D) Disordered eating, amenorrhea, and osteoporosis.

294. The passage indicates that, on average, a physiological gender difference that favors men in power sports is their:
(A) greater flexibility.
(B) greater absolute muscle mass.
(C) higher percentage of body fat.
(D) lower incidence of musculoskeletal injuries.

NODIA

295. An understanding of the special problems of women athletes is presented as essential for:
(A) justifying the exclusion of women from certain sports.
(B) creating separate competitive rules for men and women.
(C) designing safe training and implementing injury prevention.
(D) proving that men are superior athletes in all disciplines.

Direction : Please read the following source carefully.

Ergogenic aids are substances or practices that enhance or are perceived to enhance energy use, production, or recovery, and thereby improve athletic performance. The physiological aspects of these aids are diverse, ranging from nutritional supplements to mechanical and pharmacological agents. For instance, creatine supplementation is known to increase intramuscular phosphocreatine stores, which can improve performance in short-burst, high-intensity activities by accelerating ATP regeneration. In contrast, massage is a mechanical ergogenic aid with specific manipulations designed to elicit physiological responses beneficial for recovery and performance. Techniques such as effleurage (stroking), pétrissage (kneading), and friction are applied to soft tissues. The proposed physiological responses to massage include increased local blood flow, which may aid in the removal of metabolic waste products and delivery of oxygen and nutrients. It is also suggested to reduce muscle tension and soreness, potentially by modulating neuro-muscular excitability and decreasing edema. While some claims about massage, such as its ability to flush out lactic acid, are debated, its role in promoting relaxation and reducing the perception of fatigue is widely accepted, making it a common practice in athlete recovery protocols.

Based on the above source, attempt the following five questions.

296. According to the passage, what is the primary function of an ergogenic aid?
(A) To ensure compliance with anti-doping regulations.
(B) To serve exclusively as a form of therapeutic modality.
(C) To diagnose physiological deficiencies in athletes.
(D) To enhance athletic performance or recovery.

297. The performance-enhancing effect of creatine supplementation is attributed to its ability to:
(A) increase intramuscular phosphocreatine stores.
(B) increase the body's aerobic capacity.
(C) reduce overall muscle mass.
(D) decrease the perception of fatigue.

298. Pétrissage is described in the text as a massage manipulation that involves:
(A) light, continuous stroking movements.
(B) kneading of the soft tissues.
(C) deep pressure applied in a circular motion.
(D) rapid tapping or percussive movements.

299. One of the proposed physiological responses to massage is an increase in local blood flow, which may:
(A) increase the concentration of lactic acid in the muscle.
(B) aid in the removal of metabolic waste products.
(C) reduce the delivery of oxygen to the tissues.
(D) heighten neuro-muscular excitability.

300. The passage suggests that while some physiological claims about massage are debated, it is widely accepted for its role in:
(A) promoting relaxation and reducing perceived fatigue.
(B) significantly increasing maximal strength.
(C) directly flushing lactic acid from muscles.
(D) building new muscle tissue post-exercise.

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ANSWERS

1. (B) The functional study of bodily responses and adaptations to exercise.
Exercise physiology is the study of how the body's functions and systems adapt to the stress of physical activity. It explores acute responses and long-term changes in the cardiovascular, respiratory, and muscular systems. This knowledge provides a scientific foundation for athletic training and health interventions. By analyzing these functional adjustments, exercise physiology helps optimize performance and improve well-being across various populations through evidence-based practices and conditioning programs.

2. (A) Both Statement I and Statement II are true.
Exercise physiology is a vital tool for the scientific selection of athletes based on their specific physiological capacities for different sports. It also provides the necessary foundation for developing effective conditioning programs that improve athletic performance. By understanding how the body responds to various training loads, coaches can tailor programs to meet individual needs. These principles ensure that training is both safe and effective, ultimately leading to superior outcomes in competitive sports.

3. (C) An anticipatory increase in heart rate.
The initial increase in heart rate at the start of physical activity is an anticipatory response controlled by the central nervous system. This occurs through the withdrawal of vagal tone and an increase in sympathetic activity before the physical demand fully begins. This rapid adjustment prepares the cardiovascular system to deliver oxygenated blood more efficiently to the working muscles. It ensures the body can meet the immediate energy requirements of the exercise bout effectively.

4. (D) Maximum cardiac output
Maximal oxygen uptake represents the highest rate at which the body can utilize oxygen during intense exercise. A primary physiological factor limiting this capacity is the maximum amount of blood the heart can pump per minute. This cardiac output is the product of heart rate and stroke volume. High cardiac output ensures efficient delivery of oxygen to skeletal muscles, facilitating superior aerobic performance and cardiorespiratory fitness in athletes and active individuals.

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5. (C) Increased left ventricular chamber size and myocardial contractility.
Long-term endurance training leads to structural and functional changes in the heart that improve efficiency. The heart muscle undergoes healthy hypertrophy, particularly an increase in the size of the left ventricular chamber. This allows the heart to hold more blood before contraction, while improved myocardial contractility ensures more blood is ejected per beat. Consequently, stroke volume increases significantly, allowing for improved oxygen delivery during physical activity and better endurance performance overall.

6. (A) Both A and R are true and R is the correct explanation of A.
Aerobic exercise imposes a significant volume load on the heart, requiring it to handle large amounts of blood. To adapt to this demand, the left ventricular cavity expands, a process known as eccentric hypertrophy. This structural modification increases the end-diastolic volume, which in turn enhances the stroke volume through the Frank-Starling mechanism. Such adaptations are essential for endurance athletes to maintain high cardiac output efficiently, and the reason provided correctly explains the structural changes.

7. (D) Higher stroke volume at the same absolute workload.
Trained endurance athletes exhibit higher efficiency at the same absolute workload compared to untrained individuals. Their hearts are capable of pumping more blood with each contraction due to increased chamber size and contractility. This superior stroke volume allows the athlete to maintain the required cardiac output with a lower heart rate. Such physiological

efficiency reflects chronic adaptations to aerobic training, enabling better performance with less cardiovascular strain during exercise and improved recovery after physical activity.

8. (A) Maximal heart rate significantly increases with long-term endurance training.
While endurance training leads to numerous beneficial adaptations, the maximal heart rate generally remains stable or may slightly decrease with age and training. Instead, the body improves performance by increasing stroke volume and maximal cardiac output. Resting heart rate decreases due to enhanced vagal tone, and muscle capillarization increases to improve oxygen delivery. These changes optimize the oxygen-carrying capacity of the blood and muscular efficiency without requiring a higher maximal heart rate for athletes.

9. (B) (i) and (iii) only.
Consistent physical activity induces significant changes in the cardiovascular and muscular systems. One major adaptation is the increase in maximal cardiac output, driven by enhanced stroke volume. Additionally, skeletal muscles develop a denser network of capillaries, which facilitates better oxygen and nutrient exchange. These improvements do not include a decrease in resting stroke volume or mitochondrial density, which actually increase with training to support better performance. Therefore, the correct statements describe these positive functional adaptations.

10. (A) It is striated in appearance under a microscope.
Smooth muscle is characterized by its lack of striations, giving it a uniform appearance under a microscope. It is primarily located in the walls of hollow internal organs such as the gastrointestinal tract and blood vessels. This muscle type operates under involuntary control, meaning its movements are not consciously directed. Its contraction and relaxation cycles are typically slower and more sustained compared to the rapid movements of skeletal muscles, and it is not striated like cardiac tissue.

11. (D) Sarcomere
The sarcomere is the smallest functional unit of a myofibril, defined by the space between two consecutive Z-lines. It contains organized arrangements of thick and thin filaments, primarily myosin and actin. During muscle contraction, these filaments slide past each other, causing the sarcomere to shorten. This microscopic structure is repeated throughout the muscle fiber, and its collective shortening results in the contraction of the entire muscle. This process is fundamental to all voluntary movements in the human body.

12. (A) (ii), (iv), (i), (iii)
Muscular contraction begins when an action potential reaches the neuromuscular junction via a motor neuron. This signal triggers the release of acetylcholine, which depolarizes the muscle cell membrane. Subsequently, calcium ions are released and bind to troponin, causing a structural shift that exposes binding sites on actin. Finally, the myosin heads attach and perform a power stroke, pulling the filaments together to shorten the sarcomere. This chronological sequence accurately describes the molecular steps involved in producing movement.

13. (C) Production of hormones like insulin.
Skeletal muscles are essential for producing voluntary body movements and maintaining posture against the force of gravity. They also play a vital role in joint stabilization and the generation of heat through metabolic activity, which helps regulate body temperature. While they are crucial for physical activity and metabolic health, they do not have the primary physiological role of producing hormones like insulin, which is handled by the pancreas. Their functions are primarily mechanical and thermoregulatory in nature.

14. (D) Statement I is false, but Statement II is true.
Slow-twitch fibers are specifically designed for endurance because they possess a high density of mitochondria and myoglobin. These characteristics allow them to utilize oxygen efficiently and resist fatigue during prolonged, low-intensity activities. In contrast, fast-twitch fibers are built for speed and power but fatigue quickly, making them poorly suited for marathon running. Understanding these differences is fundamental in exercise physiology for determining an athlete's suitability for specific

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sports and designing appropriate training protocols for various muscle groups.

15. (A) P-2, Q-1, R-3, S-4
Type I muscle fibers are characterized by high myoglobin content and slow contraction speeds, making them ideal for aerobic endurance. Conversely, Type IIb fibers have a large diameter and a high capacity for anaerobic glycolysis, allowing for powerful, fast contractions. These traits determine how different muscles respond to various types of physical stress. Matching these characteristics accurately is essential for understanding the functional diversity of human skeletal muscle tissues and their respective roles in athletic performance and endurance.

16. (B) Type IIx (or IIb) fibers
Elite sprinters require explosive power and rapid force production, which are primary characteristics of Type IIx fibers. These fast-twitch fibers have high glycolytic capacity, allowing for quick energy release during short, intense bursts of activity. Unlike endurance athletes who rely on slow-twitch fibers for sustainability, sprinters benefit from a higher percentage of these powerful fibers. This physiological makeup is a key determinant of success in high-intensity, short-duration athletic competitions that demand maximum speed and strength.

17. (B) Improved neuromuscular recruitment and coordination.
Rapid increases in strength observed during the early stages of a resistance training program are not initially due to muscle growth. Instead, they result from improvements in how the nervous system communicates with the muscles. This includes better recruitment of motor units, increased firing rates, and improved synchronization of muscle fibers. These neural adaptations allow an individual to produce more force from existing muscle mass before significant structural hypertrophy begins to occur in the following weeks of consistent training.

18. (A) (i), (iv), and (v) only
Type I muscle fibers are specifically adapted for endurance and aerobic metabolism. They possess a high oxidative capacity due to abundant mitochondria and a dense capillary network. These fibers are rich in myoglobin, which gives them a distinct red color and facilitates oxygen transport. Additionally, they are innervated by smaller motor neurons and exhibit high resistance to fatigue. This makes them ideal for maintaining prolonged, steady physical activities like distance running, which require efficient energy use over time.

19. (C) To store and release calcium ions (Ca^{2+}).
The sarcoplasmic reticulum functions as a specialized network within the muscle fiber dedicated to managing calcium ions. When an electrical impulse travels down the T-tubules, this structure releases stored calcium into the sarcoplasm. These ions then bind to troponin to initiate the contraction process. After the contraction, the sarcoplasmic reticulum actively pumps calcium back inside to allow the muscle to relax. This regulation is vital for muscle function, ensuring that contractions only occur when neural signals are present.

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20. (D) During contraction, the actin and myosin filaments themselves shorten in length.
The sliding filament theory describes how muscle contraction occurs without any actual shortening of the actin or myosin filaments themselves. Instead, these protein filaments slide past one another, which increases their degree of overlap. This movement pulls the Z-lines closer together, causing the sarcomere and the entire muscle to shorten. Energy for this process is provided by ATP, which is necessary for the attachment and detachment of the myosin cross-bridges. The filaments maintain their individual length during this process.

21. (A) Both A and R are true and R is the correct explanation of A.
Communication between a motor neuron and a muscle fiber relies on chemical messengers rather than direct electrical contact. When a nerve impulse arrives at the axon terminal, it triggers the release of acetylcholine into the synaptic cleft. This neurotransmitter then travels across the gap to bind with specific receptors on the sarcolemma, initiating an electrical signal in the muscle. This chemical relay ensures precise control over muscle activation and contraction throughout the body, making the neuromuscular transmission a chemical process.

22. (B) A single motor neuron and all the muscle fibers it innervates.
A motor unit represents the basic functional component of the neuromuscular system. It consists of a single alpha motor neuron and all the specific muscle fibers it innervates. When the neuron fires an impulse, every fiber within that unit contracts simultaneously. The size of these units varies depending on the muscle's function, with smaller units providing fine control and larger units generating the significant force required for gross movements. This organization is fundamental to how the body regulates muscle tension.

23. (D) If a stimulus triggers an action potential, all muscle fibers in that motor unit will contract maximally.
The all-or-none principle dictates that if a neural stimulus reaches the threshold required to trigger an action potential, the entire motor unit responds. This means every muscle fiber connected to that specific motor neuron will contract with maximum force for that given moment. There is no partial contraction of a motor unit; it either activates completely or not at all. This mechanism ensures consistent and predictable responses during various levels of physical exertion and is essential for effective neuromuscular control.

24. (C) (i), (iii), and (iv) only
Effective movement relies on feedback from kinesthetic sense organs that inform the brain about body position. During skill acquisition, the nervous system develops motor engrams, which are stored memory traces for specific movements. To generate greater muscle force, the body recruits a larger number of motor units. While the cerebellum coordinates movement, it is not primarily responsible for its initiation, which is the role of the motor cortex. Thus, statements one, three, and four accurately describe neural motor control.

25. (C) Catabolism
Metabolism consists of two main types of chemical reactions: building up and breaking down molecules. The process of breaking down complex nutrients, such as large carbohydrates, into simpler molecules like glucose is known as catabolism. This release of energy is essential for powering various cellular functions and physical activities. In contrast, anabolism involves using energy to synthesize complex structures. Catabolic pathways are fundamental for providing the immediate fuel required during exercise and maintaining basic physiological processes at rest.

26. (D) Statement I is false, but Statement II is true.
Short, explosive movements like sprinting rely on anaerobic energy systems because they provide ATP almost instantaneously. The anaerobic glycolytic system is particularly important for high-intensity efforts, though it results in the production of lactic acid. This byproduct can lead to muscle fatigue if it accumulates. The aerobic system, while efficient for long durations, is too slow to meet the immediate demands of a sprint. Thus, understanding these energy pathways and their specific characteristics is vital for effective athletic training.

27. (B) P-3, Q-1, R-2, S-4
Different physical activities rely on specific energy systems and fuel sources. The ATP-PC system utilizes stored phosphocreatine for immediate, high-intensity bursts. Anaerobic glycolysis primarily breaks down glucose or glycogen for short-term energy needs. During rest or low-intensity exercise, the aerobic system mainly oxidizes fats to provide a sustainable energy supply. As intensity increases, the aerobic system shifts toward using muscle glycogen. These transitions are crucial for maintaining performance across varying durations and intensities of physical activity in sports.

28. (B) Anaerobic Glycolysis
An event lasting approximately one minute requires a high rate of energy production that exceeds the capacity of the aerobic system. While the ATP-PC system provides initial energy, anaerobic glycolysis becomes the dominant pathway for the majority of a 400-meter run. This system breaks down glycogen without oxygen, providing ATP quickly but leading to the accumulation of lactate. This balance of speed and capacity is necessary for sustaining near-maximal effort over this specific duration before aerobic metabolism takes over.

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29. (C) They sense muscle tension and cause relaxation to prevent injury.
Golgi Tendon Organs are specialized sensory receptors located at the junction of muscles and tendons. Their primary role is to monitor the amount of tension produced during a muscle contraction. If the tension becomes high enough to risk injury, the GTOs send signals to the central nervous system to inhibit the contraction. This protective mechanism causes the muscle to relax, preventing potential tears or damage to the musculoskeletal structure during heavy lifting or sudden high-force movements in sports.

30. (B) (i), (ii), (iii), (v) only
The sarcomere's complex structure is defined by specific bands and zones. The A-band contains the full length of myosin filaments, while the I-band consists only of actin. The H-zone is a central region within the A-band where actin does not overlap. Titin is a vital protein that provides elasticity and stabilizes myosin. However, the Z-line primarily anchors actin filaments, not myosin, serving as the boundary for each repeating contractile unit. Therefore, the second option correctly identifies the valid statements.

31. (A) Indirect calorimetry.
Measuring the rate of oxygen consumption and carbon dioxide production provides a reliable estimate of energy expenditure. This technique is known as indirect calorimetry because it calculates heat production based on gas exchange rather than measuring heat directly. It is widely used in exercise science to determine metabolic rates and fuel utilization during various activities. This method allows researchers to assess an individual's aerobic capacity and efficiency without the need for a complex and expensive sealed thermal chamber.

32. (B) Elevated oxygen consumption above resting levels that occurs after exercise has ceased.
After physical activity ends, oxygen consumption does not immediately return to resting levels. The volume of oxygen consumed during this post-exercise period that exceeds the normal resting rate is called Excess Post-exercise Oxygen Consumption. This additional oxygen is used to restore various physiological systems, such as replenishing phosphocreatine stores and clearing metabolic byproducts. The duration and magnitude of this elevated state depend significantly on the intensity and length of the preceding exercise session and the individual's fitness level.

33. (C) A is true but R is false.
At the beginning of exercise, the demand for ATP increases instantly, but the aerobic system requires several minutes to reach a steady state of oxygen delivery. This delay creates an oxygen deficit, where the body must rely on anaerobic pathways to bridge the gap. Therefore, the aerobic system does not respond instantaneously to energy demands. Understanding this lag is important for explaining the transition from rest to exercise and the subsequent recovery needs required to restore the body's homeostasis.

34. (A) Accumulation of metabolic byproducts like H+ ions (leading to acidosis).
During high-intensity, short-duration exercise, the rapid breakdown of energy leads to the accumulation of metabolic byproducts. Specifically, the buildup of hydrogen ions increases acidity within the muscle cells, a condition known as acidosis. This change in pH interferes with the enzyme activities and the calcium-binding processes necessary for muscle contraction. Consequently, this chemical environment is a major factor that contributes to the onset of fatigue and the inability to maintain peak performance during intense physical activities or sports.

35. (C) Within 30-60 minutes post-exercise.
The period immediately following strenuous exercise is characterized by high insulin sensitivity and increased activity of glycogen synthase. Consuming carbohydrates within the first 30 to 60 minutes after a workout significantly accelerates the rate of muscle glycogen resynthesis. This window of opportunity is crucial for athletes who need to recover quickly for subsequent training sessions or competitions. Delaying nutrient intake can slow the restoration process, potentially impacting future performance and slowing the body's overall recovery from physical stress.

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36. (A) P-3, Q-2, R-1, S-4
Oxygen deficit represents the lag in uptake at the start of exercise, while EPOC describes the elevated consumption during recovery. The lactate threshold marks the point where lactate production begins to outpace its clearance from the blood. VO_2 max is the definitive measure of an individual's maximal rate of oxygen utilization. Correctly identifying these terms is essential for analyzing cardiorespiratory fitness and understanding how the body manages energy demands during and after physical activity across various intensities and durations.

37. (C) Muscle and liver glycogen
Sudden and severe fatigue during a marathon typically occurs when the body's limited stores of muscle and liver glycogen are nearly exhausted. Glycogen is the preferred fuel for high-intensity aerobic exercise, and once depleted, the body must rely more heavily on fat metabolism, which is a slower process. This transition leads to a significant drop in pace and a feeling of heavy exhaustion, commonly referred to as hitting the wall during the race. Maintaining these stores is critical for endurance.

38. (B) Fat intake should be completely eliminated from an athlete's diet for optimal performance.
While carbohydrates and proteins are vital for energy and muscle repair, fats are also a necessary component of an athlete's diet. Fats serve as a concentrated energy source, especially during low to moderate intensity exercise, and are essential for absorbing fat-soluble vitamins and producing hormones. Eliminating fat entirely would be detrimental to overall health and long-term athletic performance. Proper nutrition requires a balanced intake of all macronutrients to support the body's various physiological demands and ensure sustainable health.

39. (A) (i), (ii), and (iii) only
The recovery process involves multiple stages to restore the body to its resting state. The fast component of EPOC focuses on replenishing high-energy phosphate stores like ATP and phosphocreatine. The slow component includes the metabolic processes of converting lactate back into glucose in the liver. Restoring muscle glycogen is an active process that requires energy. Contrary to some beliefs, a light active cool-down actually helps speed up lactate clearance rather than hindering the process, making the first three statements correct.

40. (A) Evaporation of sweat
The body relies heavily on the evaporation of sweat to lose heat during exercise in warm environments. As humidity increases, the air becomes saturated with moisture, which significantly reduces the rate at which sweat can evaporate from the skin. This impairment makes it difficult for the body to maintain its core temperature, increasing the risk of heat-related illnesses. Consequently, evaporation is the most critical but also the most vulnerable cooling mechanism in humid conditions, demanding careful attention during exercise.

41. (C) Increased breathing rate (hyperventilation).
Upon arriving at high altitude, the lower partial pressure of oxygen triggers an immediate increase in the rate and depth of breathing. This hyperventilation is a primary physiological response designed to increase oxygen intake and delivery to the tissues. While long-term adaptations include increased red blood cell production, the initial phase is characterized by respiratory and cardiovascular adjustments, such as an elevated heart rate, to compensate for the hypoxic environment and maintain necessary oxygen levels for bodily functions and movement.

42. (B) (ii), (iii), (i), (iv)
Adapting to heat involves a series of physiological changes that occur over several days. Initially, the body starts sweating earlier at a lower core temperature to initiate cooling sooner. This is followed by an increase in the overall sweat rate to enhance heat loss. Subsequently, plasma volume expands to support both cardiovascular function and sweat production. Finally, the concentration of salt in the sweat decreases, which helps the body conserve essential electrolytes during prolonged exposure to heat and physical exertion.

43. (D) Increased risk of heat stroke
Exercising in cold temperatures presents specific physiological hazards such as hypothermia, which is a dangerous drop in core body temperature. Frostbite can also occur when skin and underlying tissues freeze due to extreme cold exposure. Some individuals may experience

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exercise-induced bronchospasm as they breathe in cold, dry air. However, the risk of heat stroke is not associated with cold environments; rather, it is a severe condition resulting from overheating in hot and humid conditions, making it the exception.

44. (C) Statement I is true, but Statement II is false.
On average, biological females possess a higher percentage of essential and storage body fat compared to males, who typically have a greater proportion of skeletal muscle mass. These differences in body composition directly influence performance in activities that require significant strength, power, and speed. A higher muscle-to-weight ratio generally provides an advantage in explosive movements. Therefore, while training can modify composition, these baseline physiological differences remain relevant factors in competitive athletic performance and influence the potential for success in various sports.

45. (C) Males typically have higher hemoglobin concentrations, resulting in a greater oxygen-carrying capacity.
One of the most significant physiological differences between males and females is the concentration of hemoglobin in the blood. Males typically have higher levels of this protein, which directly increases the blood's capacity to transport oxygen to working muscles. This provides a distinct advantage in aerobic endurance activities. While both genders show similar trainability of muscle tissue, differences in heart size, body composition, and hormonal profiles contribute to variations in absolute performance levels across different endurance-based and high-intensity athletic sports.

46. (D) Disordered eating, amenorrhea, and osteoporosis.
The female athlete triad is a serious clinical condition observed in some active women and girls. It consists of three interrelated components: low energy availability, which often involves disordered eating; menstrual dysfunction, specifically the absence of periods known as amenorrhea; and decreased bone mineral density, leading to osteoporosis. These factors are closely linked, as insufficient energy intake can disrupt hormonal balance, which in turn negatively affects reproductive health and bone strength, increasing the overall risk of fractures and long-term injury.

47. (A) Amenorrhea
Amenorrhea refers to the absence of menstrual cycles in a female of reproductive age. In the context of sports and the female athlete triad, it is often caused by low energy availability where the body suppresses reproductive functions to conserve energy. If a woman has previously had regular cycles but they stop for six months or more, it is classified as secondary amenorrhea. This condition is a significant indicator of physiological stress and potential long-term health risks that require medical attention.

48. (B) A decline in maximal oxygen uptake (VO_2 max).
A hallmark of the aging process is a progressive decline in maximal oxygen uptake, which reflects a decrease in cardiorespiratory fitness. This reduction is primarily driven by a lower maximal heart rate and a decrease in maximal stroke volume. Additionally, the body's ability to extract and utilize oxygen at the muscular level diminishes over time. While regular exercise can slow this decline, the aging process inevitably leads to a reduction in the body's peak aerobic capacity and overall cardiovascular efficiency.

49. (B) (i), (iii), and (v) only
The natural aging process is associated with several distinct physiological changes. There is a typical decrease in skeletal muscle mass and strength, a condition known as sarcopenia. Bone density also tends to decline over time, increasing the fragility of the skeleton. Furthermore, the speed at which the nervous system transmits impulses, known as nerve conduction velocity, generally slows down. These combined factors contribute to reduced physical function and an increased risk of injury and falls in older populations, while heart rate decreases.

50. (A) It helps to counteract sarcopenia and maintain functional strength.
For older adults, engaging in regular resistance training is one of the most effective ways to maintain physical independence. This type of exercise directly counteracts sarcopenia, the age-related loss of muscle mass, by stimulating

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hypertrophy and improving motor unit recruitment. Maintaining functional strength is crucial for performing daily tasks such as walking and climbing stairs. Additionally, resistance training helps preserve bone mineral density, which is essential for preventing fractures and ensuring long-term musculoskeletal health and physical stability in later life.

51. (C) A is true but R is false.
Applying cold therapy immediately after a soft tissue injury is a standard practice to manage inflammation and pain. The cold temperature triggers local vasoconstriction, which reduces blood flow to the area and helps minimize swelling. However, the reasoning that cold causes vasodilation is incorrect. While cryotherapy is effective for initial treatment, the physiological mechanism involves narrowing the blood vessels to limit the accumulation of fluid and inflammatory mediators in the damaged tissue, rather than increasing blood flow through dilation.

52. (B) Vasodilation, increased blood flow, and increased tissue extensibility.
In a rehabilitation setting, the application of heat, or thermotherapy, is used to promote healing and prepare tissues for exercise. The primary physiological effects include local vasodilation and increased blood flow, which brings more oxygen and nutrients to the injured area. Heat also increases the extensibility of collagen tissues, making muscles and joints more flexible and easier to stretch. These responses are beneficial for reducing stiffness, alleviating chronic pain, and improving the overall range of motion in affected joints.

53. (C) Ergogenic aid
The term ergogenic aid refers to any substance, technique, or device that is used with the intention of enhancing physical performance beyond what is achievable through natural training. These aids can be categorized into various types, including nutritional supplements, pharmacological drugs, physiological methods, and even psychological strategies. While some are legal and widely used, others are banned in competitive sports. Understanding their mechanisms and effects is a central part of sports science and exercise physiology for optimizing human athletic potential.

54. (B) To act as a buffer against the accumulation of hydrogen ions (H+), delaying fatigue.
During high-intensity exercise, the body produces hydrogen ions that increase muscle acidity and cause fatigue. Sodium bicarbonate acts as an alkalizing agent that increases the buffering capacity of the blood. By neutralizing these excess hydrogen ions, it helps maintain a more stable pH within the working muscles. This allows athletes to sustain high-intensity efforts for a longer period, particularly in events like the 800-meter run where anaerobic glycolysis is the predominant energy system used for rapid ATP production.

55. (C) Kneading, lifting, and squeezing of the muscle tissue.
Pétrissage is a fundamental massage technique that involves the rhythmic kneading, lifting, and squeezing of muscle tissues. This manipulation is designed to reach deeper layers of muscle than superficial stroking. Its primary physiological benefits include increasing local blood circulation and helping to milk metabolic waste products out of the tissues. By stretching and loosening the muscle fibers, pétrissage can help reduce muscle tension, improve flexibility, and facilitate the recovery process after intense physical activity or complex musculoskeletal injury.

56. (B) To enhance the clearance of metabolic waste and reduce muscle soreness.
The primary goal of massage performed after an athletic event is to facilitate recovery and return the body to its pre-exercise state. This technique focuses on enhancing the clearance of metabolic waste products, such as lactate, that have accumulated during physical activity. By improving circulation and reducing muscle tension, it can help minimize the severity of delayed onset muscle soreness. This approach promotes relaxation and helps the athlete recover more quickly for future training sessions or high-intensity competition.

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57. (C) Because muscle tissue in both genders responds to the stress of exercise in the same basic way.
From a physiological perspective, the fundamental mechanisms of muscle adaptation are consistent across both genders. While hormonal profiles differ, the way muscle tissue responds to the stress of exercise through increased protein synthesis and improved neural recruitment is essentially the same for both males and females. Therefore, female athletes can achieve significant improvements in strength and endurance through appropriate training programs. Recognizing this shared capacity for adaptation is crucial for designing effective and inclusive athletic training protocols and standards.

58. (B) Maximization of muscle glycogen stores.
A properly conducted warm-up provides numerous physiological benefits, such as increasing core and muscle temperature and enhancing blood flow to active tissues. These changes improve the speed of metabolic reactions and the efficiency of muscle contractions. However, a warm-up does not maximize muscle glycogen stores; glycogen levels are determined by long-term nutritional intake and rest. Instead, a warm-up prepares the body's systems for the upcoming physical stress, reducing the risk of injury and improving overall performance levels during exercise.

59. (A) The body must be exercised at a level beyond that to which it is normally accustomed to achieve a training effect.
The principle of overload is a fundamental concept in exercise science stating that for a training effect to occur, the body must be challenged beyond its current capacity. By regularly increasing the intensity, duration, or frequency of exercise, the physiological systems are forced to adapt and become more efficient. Without this progressive stress, the body will maintain its current level of fitness rather than improving. This structured approach ensures continued progress and adaptation in any physical training program or sport.

60. (B) Elasticity : Ability to generate a forceful contraction.
Muscle tissue possesses several unique properties, including excitability, contractility, and extensibility. Elasticity specifically refers to the muscle's ability to return to its original resting length after being stretched. It is not defined as the ability to generate a forceful contraction, which is actually the definition of contractility. Understanding these distinct characteristics is essential for analyzing how muscles function during movement and how they recover from the various physical stresses encountered during exercise, training, and regular daily activities.

61. (B) It serves as an intracellular oxygen storage and transport molecule.
Myoglobin is a specialized iron-bearing protein found within skeletal and cardiac muscle fibers. Its primary role is to serve as an intracellular storage site for oxygen and to facilitate its transport from the cell membrane to the mitochondria. This is particularly important during intense exercise when the demand for oxygen is high. By maintaining a reservoir of oxygen, myoglobin helps support aerobic metabolism and delays the onset of fatigue in muscles that require a steady and continuous energy supply.

62. (C) It powers the movement of the myosin head and allows it to detach from actin.
Adenosine triphosphate is the essential energy source that powers the molecular mechanisms of muscle contraction. Specifically, the breakdown of ATP provides the energy required for the myosin head to perform the power stroke, which pulls the actin filament. Furthermore, the binding of a new ATP molecule is necessary for the myosin head to detach from the actin binding site, allowing the cycle to repeat. Without sufficient ATP, the cross-bridge cycle would stop, resulting in muscle stiffness and failure.

63. (B) Isometric
An isometric contraction occurs when a muscle generates tension without any visible change in its length or movement at the associated joint. This typically happens when the force produced by the muscle is equal to the external resistance, such as holding a heavy weight in a fixed position. While the internal fibers are active and consuming energy, the overall structure remains static. This type of contraction is useful for maintaining posture and stabilizing joints during various physical tasks and exercises.

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64. (B) An increase in the size of existing muscle fibers (hypertrophy).
The increase in muscle size resulting from long-term resistance training is primarily due to hypertrophy. This process involves an increase in the cross-sectional area of individual muscle fibers through the synthesis of more contractile proteins, such as actin and myosin. While some debate exists regarding hyperplasia, or the splitting of fibers, hypertrophy remains the most significant and well-documented cause of muscle growth in humans. This adaptation allows the muscle to generate greater force and handle higher physical training loads.

65. (C) Muscle Spindle
Muscle spindles are specialized sensory receptors embedded within skeletal muscles that detect changes in muscle length and the speed at which the muscle is being stretched. When a rapid stretch occurs, these spindles send signals to the spinal cord, which then triggers a reflexive contraction of the same muscle. This stretch reflex serves as a protective mechanism to prevent overstretching and injury, and it also plays a key role in maintaining muscle tone and posture during various movements.

66. (B) Oxygen
During the final stage of aerobic metabolism, known as the electron transport chain, electrons are passed through a series of proteins to generate ATP. Oxygen serves as the ultimate electron acceptor at the end of this chain. When oxygen accepts these electrons along with hydrogen ions, it forms water as a harmless byproduct. This critical role of oxygen is why aerobic exercise can only be sustained when the respiratory and cardiovascular systems provide a continuous and adequate supply to tissues.

67. (C) Gluconeogenesis
Gluconeogenesis is a vital metabolic pathway that allows the body to maintain blood glucose levels during periods of fasting or prolonged, intense exercise. This process primarily takes place in the liver and involves the synthesis of new glucose molecules from non-carbohydrate precursors, such as lactate, glycerol, and certain amino acids. By producing glucose from these alternative sources, the body ensures a steady energy supply for the brain and working muscles when carbohydrate stores are low, depleted, or unavailable.

68. (C) Carbohydrates
The Respiratory Exchange Ratio is the ratio between the amount of carbon dioxide produced and oxygen consumed. An RER value of 1.00 indicates that the body is almost entirely metabolizing carbohydrates for energy. This typically occurs during high-intensity exercise when the demand for rapid ATP production is high. Carbohydrates are the most efficient fuel source under these conditions. Monitoring RER helps researchers and coaches understand an individual's fuel utilization and metabolic efficiency at different levels of physical exertion and training.

69. (A) Restoration of ATP and phosphocreatine stores.
Excess Post-exercise Oxygen Consumption consists of a fast and a slow component. The fast component occurs immediately after exercise and is responsible for the rapid replenishment of ATP and phosphocreatine stores and re-oxygenating myoglobin. The slow component lasts longer and involves processes like converting lactate to glucose, managing elevated body temperature, and supporting continued high heart and breathing rates. Therefore, restoring phosphocreatine is a characteristic of the fast, not the slow, component of the body's post-exercise recovery period.

70. (A) Cardiovascular drift
Cardiovascular drift is a phenomenon observed during prolonged, steady-state exercise, especially in warm environments. Despite a constant workload, the heart rate gradually increases while the stroke volume tends to decrease. This adjustment occurs primarily due to a rise in core temperature and a reduction in plasma volume through sweating. To maintain the necessary cardiac output and continue delivering oxygen to muscles, the heart must beat more frequently, reflecting the body's effort to manage heat and maintain circulation during physical activity.

71. (C) Decreases.
As an individual moves to higher altitudes, the total atmospheric pressure decreases. While the percentage of oxygen in the air remains constant

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at approximately 21 percent, the partial pressure of oxygen drops significantly. This decrease in partial pressure reduces the pressure gradient required for oxygen to move from the lungs into the blood. Consequently, less oxygen is available for the body to use, which challenges aerobic performance and requires physiological adaptations like increased breathing and heart rates to maintain function.

72. (A) A greater ability to metabolize fat as a fuel source.
In ultra-endurance events, the body must rely on sustainable energy sources to maintain performance over many hours. Biological females often demonstrate a greater capacity to utilize fat as a primary fuel source compared to males. By sparing limited glycogen stores and using abundant fat reserves more efficiently, females may have a metabolic advantage in extremely long-duration activities. This physiological trait helps them maintain steady energy levels and potentially minimize the impact of fatigue during prolonged, low-to-moderate intensity athletic efforts.

73. (B) Low levels of estrogen.
The loss of bone mineral density associated with the female athlete triad is primarily caused by a significant drop in estrogen levels. Estrogen plays a critical role in maintaining bone health by inhibiting the cells that break down bone tissue. When intense training and low energy intake lead to amenorrhea, estrogen production is suppressed, resulting in accelerated bone loss and an increased risk of stress fractures and osteoporosis. Maintaining hormonal balance is therefore vital for skeletal strength and long-term health.

74. (B) Attenuates the loss of muscle mass and strength.
Engaging in regular, moderate exercise is highly beneficial for older adults as it helps to counteract many of the typical physiological declines associated with aging. Specifically, consistent activity can attenuate the loss of muscle mass and strength, helping to maintain functional independence. Exercise also improves cardiovascular health, enhances insulin sensitivity, and supports bone density. By staying active, older individuals can significantly improve their quality of life and reduce the risk of chronic diseases and age-related physical disabilities or injury.

75. (B) Thermotherapy (hot pack)
In a rehabilitation context, applying a hot pack is an effective way to increase the temperature of local tissues before a stretching or exercise session. The heat causes vasodilation and improves blood flow, which reduces joint stiffness and makes the collagen fibers in muscles and tendons more pliable and easier to stretch. This increased tissue extensibility helps to improve the overall range of motion and reduces the risk of further injury during the subsequent physical activity or therapeutic session.

76. (B) A series of short, explosive sprints with brief recovery.
Creatine monohydrate is a widely researched ergogenic aid that works by increasing the stores of phosphocreatine within the muscles. This additional reservoir allows for a more rapid regeneration of ATP during very short, high-intensity activities. Therefore, it is most effective for improving performance in sports that involve repeated bouts of explosive movements, such as sprinting or heavy weightlifting. It provides less benefit for long-duration aerobic events like marathons, where the primary energy demand is met through oxidative metabolism.

77. (B) Tapotement
Tapotement is a category of massage techniques characterized by rhythmic, percussive movements such as hacking, cupping, or tapping. These strokes are typically performed rapidly using the hands or fingers to provide a stimulating effect. The primary physiological goals of tapotement include increasing local blood flow and stimulating the nervous system and muscle spindles. Because of its invigorating nature, it is often used as part of a pre-event massage to help prepare an athlete's body and mind for upcoming competition.

78. (B) The principle of reversibility indicates that fitness gains are lost when training ceases.
The principle of reversibility states that the physiological adaptations achieved through regular exercise are not permanent. If a training program is discontinued or significantly reduced,

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the body will gradually lose the gains in strength, endurance, and flexibility it has made. This use it or lose it concept emphasizes the importance of consistency in maintaining fitness levels. While the rate of decline varies among individuals, a period of inactivity will eventually lead to a return toward baseline physiological health and performance.

79. (B) Skeletal muscles
During vigorous exercise, the body undergoes a dramatic redistribution of blood flow to prioritize the needs of the working skeletal muscles. Through a combination of systemic vasoconstriction in non-essential areas and local vasodilation in active tissues, the percentage of cardiac output directed to the muscles can increase from about 20 percent at rest to over 80 percent. This ensures that the muscles receive the vast amount of oxygen and nutrients required to sustain high-intensity physical activity and remove metabolic waste.

80. (C) The active muscles extracting more oxygen from the blood.
The arteriovenous oxygen difference represents the difference in oxygen content between the blood in the arteries and the blood in the veins. During exercise, this difference increases because the active skeletal muscles become much more efficient at extracting and utilizing the oxygen delivered to them. As the muscles pull more oxygen out of the blood to fuel aerobic metabolism, the oxygen content of the venous blood returning to the heart decreases. This adaptation is a key factor in improving aerobic capacity.

81. (B) Increased density of capillaries per muscle fiber.
Long-term endurance training leads to several structural changes that enhance the delivery and utilization of oxygen within the body. One of the most significant adaptations is an increase in the number of capillaries surrounding each muscle fiber. This denser capillary network reduces the diffusion distance for oxygen and nutrients, allowing for more efficient exchange between the blood and the muscle cells. This improvement, along with increased mitochondrial density, significantly enhances the aerobic capacity and endurance performance of the trained athlete.

82. (C) Actin
In the microscopic structure of a muscle fiber, the thin filaments are primarily composed of the protein actin. These filaments are arranged in a helical structure and also contain regulatory proteins called troponin and tropomyosin, which control the interaction between actin and myosin. During contraction, the thin filaments are pulled toward the center of the sarcomere by the thick filaments. This organized interaction is the basis of the sliding filament theory, which describes how muscles generate force and produce voluntary movement.

83. (B) Its cells are connected by intercalated discs.
Cardiac muscle tissue is unique to the heart and possesses several distinct characteristics. Unlike skeletal muscle, its contractions are involuntary and regulated by the autonomic nervous system. One of its most defining features is the presence of intercalated discs, which are specialized junctions that connect individual cardiac cells. These discs allow electrical impulses to spread rapidly and uniformly throughout the heart, ensuring that the muscle fibers contract as a single, coordinated unit to pump blood efficiently to the entire body.

84. (B) Type II
Powerlifters focus on heavy resistance training, which primarily targets and stimulates the Type II, or fast-twitch, muscle fibers. These fibers have a high capacity for generating large amounts of force and power, but they are also highly responsive to the stress of heavy lifting. Over time, consistent training leads to significant hypertrophy of these fibers as they synthesize more contractile proteins. This adaptation increases the overall cross-sectional area of the muscle, allowing the athlete to lift progressively heavier loads.

85. (A) Sodium (Na^+)
The transmission of a nerve impulse, or action potential, involves a rapid change in the electrical charge across the neuron's membrane. When a stimulus is strong enough to reach the threshold, specialized channels open, allowing a sudden influx of sodium ions into the cell. This movement of positively charged ions causes the inside of the neuron to become less negative, a process known as depolarization. This electrical signal then

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propagates along the axon to communicate with other neurons or muscle fibers.

86. (B) Kinesthesis
Kinesthesis is the sensory ability that allows individuals to perceive the position, weight, and movement of their body parts without relying on vision. This is achieved through feedback from specialized receptors called proprioceptors, such as muscle spindles and Golgi tendon organs, located in the muscles, tendons, and joints. Kinesthesis is essential for coordinating complex movements, maintaining balance, and developing the fine motor skills required for various athletic activities. It provides the brain with continuous information needed for physical control.

87. (C) Free fatty acids
During the early stages of low-to-moderate intensity exercise, the body uses a mix of carbohydrates and fats. However, as the duration of the activity extends beyond an hour, the body's limited glycogen stores begin to decrease. To compensate, there is a gradual shift toward utilizing free fatty acids as the more dominant fuel source. This transition allows the body to sustain long-term physical activity, as fat stores are much larger and provide a more abundant, albeit slower, source of energy.

88. (A) Measuring heat production in a sealed chamber.
Direct calorimetry is a method used to measure energy expenditure by quantifying the actual amount of heat produced by the body. This typically involves placing an individual in a specially designed, sealed chamber where the heat they release is absorbed by water flowing through the walls. By measuring the temperature change of the water, researchers can calculate the exact energy cost of an activity. While highly accurate, this method is complex and expensive, leading many researchers to use indirect calorimetry instead.

89. (C) Central nervous system (brain and spinal cord).
Fatigue can be categorized into peripheral and central components. Central fatigue specifically refers to a decrease in physical performance that originates from changes within the central nervous system, which includes the brain and spinal cord. It involves a reduction in the neural drive or the signal sent from the brain to the motor neurons, leading to a decrease in muscle activation. Factors such as neurotransmitter imbalances, psychological state, and perceived effort all play a role in this type of exhaustion.

90. (C) Phosphocreatine (PCr)
The fast component of Excess Post-exercise Oxygen Consumption occurs in the first few minutes after physical activity ends. During this brief period, the elevated oxygen uptake is primarily used to restore the body's immediate energy reserves. This includes the rapid resynthesis of high-energy phosphates, specifically phosphocreatine, which was depleted during the initial stages of exercise. This process is essential for returning the muscles to their resting metabolic state and preparing them for any potential subsequent bouts of physical exertion.

91. (B) Ensuring adequate fluid intake before, during, and after exercise.
Maintaining proper hydration is one of the most critical nutritional strategies for any athlete. To prevent dehydration and the associated decline in performance, it is essential to ensure adequate fluid intake before, during, and after physical activity. Water is necessary for temperature regulation through sweating and for maintaining blood volume for oxygen transport. Dehydration can lead to increased heart rate, impaired thermoregulation, and early fatigue. Therefore, a consistent approach to fluid replacement is vital for safety and success.

92. (B) The lower partial pressure of oxygen.
The primary physiological challenge of exercising at high altitude is not a change in the percentage of oxygen in the air, which remains constant. Instead, it is the significant reduction in the total atmospheric pressure, which leads to a lower partial pressure of oxygen. This lower pressure makes it more difficult for oxygen to pass from the lungs into the bloodstream, resulting in a state of hypoxia. This condition forces the body to work harder to deliver enough oxygen to tissues.

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93. (B) Greater muscle mass.
In general, biological males tend to have greater absolute strength than biological females. This difference is primarily attributable to the fact that males typically possess a larger total skeletal muscle mass. This greater amount of muscle tissue is often driven by higher levels of anabolic hormones like testosterone. When strength is measured in terms of the total weight lifted or force produced, the larger muscle volume in males provides a significant advantage, even though the quality of tissue is similar.

94. (C) Painful menstruation.
Dysmenorrhea is a common problem that affects many female athletes and is defined as painful menstruation. It can involve symptoms such as abdominal cramps, back pain, and general discomfort, which can sometimes be severe enough to interfere with training and competition. While regular exercise can actually help alleviate symptoms for some women, for others, the pain remains a significant challenge. Understanding and managing this condition is an important aspect of sports medicine and supporting the overall well-being of female athletes.

95. (B) Age-related loss of skeletal muscle mass and function.
Sarcopenia is a key physiological consequence of the natural aging process, characterized by the progressive and generalized loss of skeletal muscle mass, strength, and function. This decline can lead to physical frailty, a reduced quality of life, and an increased risk of falls and fractures in older adults. While aging is the primary cause, factors like a sedentary lifestyle and poor nutrition can accelerate the process. Engaging in regular resistance training is a primary way to manage this condition.

96. (B) Maintaining cardiovascular health and function.
For older adults, regular aerobic activities such as walking, swimming, or cycling are essential for maintaining overall health and functional capacity. These exercises specifically target the cardiovascular system, helping to maintain heart health, improve circulation, and manage blood pressure. Consistent aerobic activity also supports metabolic health and helps preserve lung function. By keeping the heart and lungs efficient, seniors can maintain the stamina needed for daily tasks, improve their quality of life, and reduce the risk of chronic age-related diseases.

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97. (B) Local vasoconstriction.
When an ice pack is applied to an acute injury like an ankle sprain, the immediate physiological response of the body is local vasoconstriction. This narrowing of the blood vessels in the affected area reduces the amount of blood flow and fluid that can accumulate, which helps to minimize swelling and inflammation. Additionally, the cold temperature helps to numb the nerve endings, providing a significant reduction in pain. This initial treatment is a standard part of immediate injury management protocols.

98. (A) Testosterone
Anabolic-androgenic steroids are a class of ergogenic aids that are synthetic derivatives of the male sex hormone, testosterone. These substances are used because they promote protein synthesis within cells, which leads to a significant increase in muscle mass and strength. While they can enhance performance in sports requiring power and size, their use is prohibited in most competitions due to unfair advantages and serious potential health risks. Understanding the hormonal basis of these drugs is essential for identifying their physiological effects.

99. (B) Increase circulation and promote relaxation.
Effleurage is a fundamental massage technique characterized by long, gliding, and stroking movements. It is typically performed with varying degrees of pressure at the beginning and end of a massage session. The primary physiological aims of effleurage are to increase local blood and lymphatic circulation and to promote a state of general relaxation. By soothing the nervous system and warming the tissues, it prepares the body for deeper work or helps it recover and wind down after intense physical activity.

100. (B) Evaluating the tactical strategies of team sports.
The scope of exercise physiology is broad and encompasses many aspects of human movement and performance. It involves analyzing nutritional needs, designing training programs based on scientific principles, and understanding

how environmental factors like heat and altitude affect the body. While it provides essential information for athletes and coaches, it does not typically include the evaluation of tactical strategies in team sports. That area is usually the responsibility of coaches and sports analysts who focus on game play and strategic decision-making.

101. (A) Both Statement I and Statement II are true.
During an acute bout of dynamic exercise, the body's blood pressure responds in a predictable manner. Systolic blood pressure typically increases as exercise intensity rises, reflecting the heart's increased effort to pump more blood to the working muscles. In contrast, diastolic blood pressure, which represents the pressure in the arteries when the heart is at rest between beats, generally remains stable or may even show a slight decrease. This combined response ensures efficient circulation while managing the overall strain on the cardiovascular system.

102. (A) Both A and R are true and R is the correct explanation of A.
A hallmark of cardiovascular adaptation in endurance-trained athletes is a significantly higher resting stroke volume compared to untrained individuals. This occurs because regular aerobic exercise causes the heart, particularly the left ventricle, to become larger and more efficient. The increased chamber volume allows the heart to hold more blood, while improved contractility ensures that more blood is ejected with each beat. Consequently, the athlete's heart can maintain resting cardiac output with fewer beats per minute, leading to a lower resting heart rate.

103. (B) It covers the myosin-binding sites on the actin filament.
Tropomyosin is a regulatory protein that plays a vital role in the mechanism of muscle contraction. In a resting, un-stimulated muscle fiber, tropomyosin is positioned along the actin filament in a way that it physically covers the specific sites where myosin heads would attach. This blockage prevents the formation of cross-bridges and keeps the muscle in a relaxed state. Only when calcium ions are released and bind to troponin does tropomyosin shift its position, exposing the binding sites.

104. (B) Heat production : A byproduct of muscle metabolism that helps maintain body temperature.
Muscle tissue performs several essential functions beyond just producing movement. One critical role is the production of heat, which is a natural byproduct of muscle metabolism and contraction. This heat generation is vital for maintaining the body's core temperature within a healthy range, especially in cold environments. While muscles are also responsible for posture and joint stabilization, the specific process of heat production is a fundamental metabolic service that supports overall homeostasis and protects the body's internal systems.

105. (B) P-2, Q-1, R-4, S-3
Each component of a muscle fiber has a specific role in the contraction process. Acetylcholine is the neurotransmitter that initiates the signal at the neuromuscular junction. Calcium ions are the messengers that bind to troponin to trigger the movement of tropomyosin. ATP provides the necessary energy for the myosin heads to pull the actin filaments and subsequently detach to reset the cycle. Troponin is the protein that acts as the switch, responding to calcium and allowing contraction.

106. (B) ATP-PC system
For extremely short and explosive activities like a shot put or high jump, the body requires an immediate and rapid supply of energy. The ATP-PC system, also known as the phosphagen system, is uniquely suited for this task. It utilizes stored adenosine triphosphate and phosphocreatine to provide ATP almost instantaneously without the need for oxygen or the complex steps of glycolysis. Although this system has a very limited capacity, it is the primary energy source for maximal efforts.

107. (C) The myelin sheath slows down the speed of nerve impulse conduction.
The transmission of nerve impulses involves several key physiological features. A resting neuron maintains a negative internal charge, and repolarization is achieved by the movement of potassium ions out of the cell. Synapses are the critical junctions where signals pass between cells. However, the statement that the myelin sheath slows down conduction is incorrect. In

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fact, the myelin sheath acts as an insulator that significantly increases the speed of nerve impulse transmission through a specialized process called saltatory conduction.

108. (C) (i), (iii), and (v) only
Consistent resistance training leads to several important physiological adaptations. It increases the structural strength and integrity of tendons and ligaments to support higher loads. Within the muscles, there is an increase in the activity of glycolytic enzymes to support anaerobic energy production. The most visible change is the hypertrophy of Type II muscle fibers. However, resistance training typically increases bone density rather than decreasing it, and it is not a primary method for significantly increasing maximal oxygen uptake levels.

109. (B) Glucose
During intense exercise, the muscles produce lactate through anaerobic glycolysis. The Cori Cycle is a metabolic pathway that manages this lactate by transporting it through the bloodstream to the liver. In the liver, the lactate is converted back into glucose through the process of gluconeogenesis. This newly formed glucose can then be released back into the blood to be used as fuel by the working muscles or the brain. This cycle is essential for recycling metabolic products during exertion.

110. (D) An increase in red blood cell production (polycythemia) to enhance oxygen-carrying capacity.
When spending a long period in a high-altitude environment, the body undergoes several physiological adaptations to compensate for the lower availability of oxygen. One of the most critical long-term changes is an increase in the production of red blood cells, a condition known as polycythemia. This adaptation increases the total amount of hemoglobin in the blood, which significantly enhances the body's capacity to transport oxygen to the tissues. This improved oxygen-carrying capacity is vital for survival in extreme conditions.

111. (A) (ii), (iv), (i), (iii)
The process of delivering and using oxygen during exercise involves several coordinated steps. First, oxygen enters the blood and binds to hemoglobin in the pulmonary capillaries within the lungs. Next, the heart pumps this oxygenated blood through the systemic circulation to reach the working tissues. Once the blood reaches the muscles, the oxygen is extracted and moves into the cells. Finally, the oxygen is utilized in the mitochondria as the final electron acceptor to produce ATP through aerobic metabolism.

112. (C) A fundamentally lower capacity for muscle tissue to adapt to training.
There are several important physiological considerations for female athletes, including a higher risk of iron-deficiency anemia and certain musculoskeletal injuries like ACL tears. The female athlete triad, involving energy availability, menstrual health, and bone density, is also a significant concern. However, it is incorrect to say that females have a fundamentally lower capacity for their muscle tissue to adapt to training. Research shows that relative gains in strength and muscle quality are comparable between both biological males and females.

113. (C) Avoidance of all physical stress and activity.
A comprehensive lifestyle management program for healthy aging should emphasize maintaining an active and engaged life. This includes regular aerobic and resistance exercise to support cardiovascular and musculoskeletal health, along with a balanced diet and proper rest. Avoiding all physical stress and activity is actually detrimental, as it accelerates the loss of muscle mass, bone density, and functional independence. Instead, the goal is to find an appropriate level of physical activity that safely challenges the body's systems.

114. (B) Increased local blood flow and circulation.
Both sports massage and the application of moderate heat, such as thermotherapy, share a common physiological effect of increasing local blood flow and circulation. Massage achieves this through mechanical stimulation and the rhythmic compression of tissues, while heat works by causing local vasodilation of the blood vessels. This improved circulation is beneficial for warming up the muscles, delivering essential nutrients and oxygen, and facilitating the removal of metabolic waste products. Both techniques support muscle health and the recovery process.

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115. (B) Acting as a central nervous system stimulant and potentially increasing fat mobilization.
Caffeine is a widely used ergogenic aid that is known to enhance performance in both short-term and endurance activities. Its primary mechanism of action is thought to be its role as a central nervous system stimulant, which can reduce the perception of effort and delay fatigue. Additionally, caffeine may enhance endurance by increasing the mobilization of free fatty acids, potentially allowing the body to spare its limited glycogen stores. These combined effects help athletes maintain a higher intensity.

116. (A) (i), (ii), and (iii) only
Regular endurance training leads to several predictable cardiorespiratory adaptations. The blood's oxygen-carrying capacity improves as both plasma volume and red blood cell count increase. A trained individual will typically have a lower heart rate at any given submaximal workload compared to an untrained person, reflecting greater efficiency. While training improves performance, an individual's maximal heart rate is largely determined by genetics rather than training. Furthermore, maximal stroke volume actually increases significantly with consistent and regular aerobic exercise.

117. (B) The muscle generates force and changes in length (shortens or lengthens).
An isotonic contraction is a type of muscle action where the muscle generates force while changing its length. This can occur in two forms: concentric, where the muscle shortens as it produces tension, and eccentric, where the muscle lengthens while under tension. These contractions are the basis for most dynamic movements in sports and daily life. Unlike isometric contractions, which are static, isotonic movements involve visible changes in joint angles and the physical relocation of various body parts.

118. (C) Early strength gains in a resistance training program are largely due to neural factors like increased motor unit firing rate and synchronization.
The nervous system plays a critical and early role in the development of muscular strength during a training program. The initial gains in strength observed during the first few weeks of resistance exercise are largely due to neural adaptations rather than muscle growth. These changes include improved recruitment and synchronization of motor units, as well as an increase in the firing rate of signals. These improvements allow the body to utilize its existing muscle mass more effectively before structural growth occurs.

119. (C) Fats.
The Respiratory Exchange Ratio provides insight into which fuel sources the body is utilizing for energy. A resting RER value of 0.70 indicates that the body is almost entirely relying on the oxidation of fats. This is the typical state for a healthy individual at rest, as fat is a highly abundant and sustainable energy source when the demand for ATP is low. As exercise intensity increases, the RER will rise, reflecting a greater contribution from carbohydrate metabolism.

120. (A) The body's ability to dissipate heat via evaporation is severely impaired.
Exercising in a hot and humid environment is particularly challenging because the body's primary cooling mechanism, the evaporation of sweat, is severely impaired. When the air is already saturated with moisture, sweat cannot evaporate effectively from the skin, preventing the loss of excess heat. This leads to a rapid rise in core body temperature and an increase in cardiovascular strain as the heart works harder to pump blood to the skin. This significantly increases the risk of heat exhaustion.

121. (C) The responsiveness of physiological systems to a training stimulus, which is similar between genders.
The concept of trainability refers to how effectively an individual's physiological systems respond and adapt to the stimulus of regular exercise. In the context of women in sports, research shows that their trainability is fundamentally similar to that of biological males. Both genders experience comparable relative improvements in strength, endurance, and cardiovascular function when following an appropriate training program. Recognizing this similar capacity for progress is essential for providing equal opportunities and developing effective athletic training protocols for athletes.

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122. (C) Engaging in regular, multi-component physical activity.
A key component of lifestyle management for healthy aging is the regular participation in multi-component physical activity. This includes a combination of aerobic, resistance, balance, and flexibility exercises. Engaging in such a varied program helps to maintain cardiovascular health, preserve muscle mass and bone density, and improve coordination to prevent falls. By staying active, older adults can sustain their functional independence and improve their overall quality of life. This proactive approach is much more effective than a sedentary lifestyle.

123. (B) Reduce edema (swelling) by mechanically pushing fluid out of the interstitial space.
Intermittent compression is a therapeutic technique used in rehabilitation to manage swelling and improve circulation following an injury. The device uses an inflatable sleeve to apply rhythmic pressure to the affected limb. This mechanical action helps to push excess fluid, or edema, out of the interstitial spaces and back into the circulatory and lymphatic systems. By reducing swelling, the modality can help decrease pain, improve range of motion, and create a favorable environment for the body's natural healing.

124. (B) To increase the number of red blood cells and thus the blood's oxygen-carrying capacity.
Blood doping is an illicit physiological ergogenic aid intended to significantly increase an athlete's aerobic capacity. The process involves increasing the total number of red blood cells in the circulation, either through a blood transfusion or the use of synthetic hormones. By having more red blood cells, the blood can transport a larger amount of oxygen to the working muscles. This allows the athlete to sustain a higher intensity for a longer duration, providing an advantage in endurance events.

125. (C) Ischemic compression or friction
Ischemic compression is a specialized massage technique used to address localized areas of muscle tension known as trigger points. It involves applying deep and sustained pressure directly onto the sensitive spot, which temporarily restricts blood flow to the area. When the pressure is released, there is a sudden influx of fresh blood, which helps to flush out metabolic waste and deliver nutrients. This process can help to deactivate the trigger point, reduce pain, and restore normal muscle function and flexibility.

126. (D) High glycolytic enzyme activity
Type IIx muscle fibers, also known as fast-glycolytic fibers, are designed for rapid and powerful contractions. A defining characteristic of these fibers is their high level of glycolytic enzyme activity, which allows them to produce ATP quickly through anaerobic pathways. However, they have a low mitochondrial density and low myoglobin content, which means they fatigue very quickly. These fibers are most active during short-duration, high-intensity activities such as sprinting or maximal weightlifting where immediate force production is required.

127. (A) Both Statement I and Statement II are true.
The sliding filament theory is the standard model for explaining how muscle contraction occurs at the microscopic level. According to this theory, the thick and thin filaments slide past one another to increase their overlap, causing the sarcomere to shorten. During this process, specific regions of the sarcomere, such as the I-band and the H-zone, become narrower or disappear completely. However, the A-band, which represents the full length of the thick myosin filaments, remains unchanged in its individual length.

128. (A) Both A and R are true and R is the correct explanation of A.
The lactate threshold is a key indicator of aerobic fitness, marking the point during exercise where lactate levels in the blood begin to rise sharply. In untrained individuals, this usually occurs at a lower percentage of their VO_2 max. Endurance training leads to adaptations such as increased mitochondrial density and improved lactate clearance, which delay this accumulation. This allows the trained athlete to perform at a higher relative intensity for longer before fatigue sets in. Therefore, the reason correctly explains the assertion.

129. (C) Smaller, slow-twitch motor units are recruited first, followed by larger, fast-twitch units as more force is needed.
The size principle describes the orderly way in which the nervous system activates motor

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units to produce muscle force. According to this principle, smaller motor units, which typically contain slow-twitch oxidative fibers, are recruited first for low-intensity tasks. As the demand for force increases, the body progressively recruits larger motor units that contain fast-twitch fibers. This systematic approach allows for fine motor control during light activities while ensuring that the necessary power is available for more demanding physical efforts.

130. (A) To provide the central nervous system with feedback about body and limb position, movement, and force.
Kinesthetic sense organs, also known as proprioceptors, play a vital role in the neural control of movement by providing continuous feedback to the central nervous system. These specialized receptors, such as muscle spindles and Golgi tendon organs, monitor changes in muscle length, tension, and joint position. This information allows the brain to track where the limbs are in space and how much force is being produced. This real-time feedback is essential for coordinating movements and maintaining balance during tasks.

131. (A) P-4, Q-1, R-2, S-3
Cardiac output is defined as the total volume of blood pumped by the heart per minute, while stroke volume is the amount of blood ejected in a single beat. The a-vO_2 difference measures how much oxygen the tissues extract from the blood. VO_2 max represents the maximum rate at which an individual can utilize oxygen during intense physical activity. Accurately understanding these terms is fundamental for assessing cardiovascular function and overall aerobic fitness, as they determine oxygen delivery.

132. (C) 32-38 ATP
Aerobic metabolism is a highly efficient process that breaks down glucose in the presence of oxygen to produce energy. While anaerobic glycolysis only yields a net of 2 to 3 ATP molecules per glucose molecule, the complete aerobic pathway—including the Krebs cycle and the electron transport chain—produces significantly more. The approximate net yield for one molecule of glucose is between 32 and 38 ATP. This high output allows for the sustained performance required during long-duration, moderate-intensity aerobic activities.

133. (B) Resynthesis of muscle and liver glycogen from carbohydrates.
The recovery period following exercise is a time for the body to restore its depleted energy reserves and return to homeostasis. A key part of this process is the resynthesis of muscle and liver glycogen stores, which were used as fuel during the activity. This restoration primarily occurs through the consumption and processing of dietary carbohydrates. Returning these glycogen levels to normal is essential for ensuring the body has sufficient energy for future tasks and is a critical recovery component.

134. (A) (i), (ii), and (iii) only
Aging is associated with several distinct changes in the cardiorespiratory system that can impact physical performance. There is a progressive decline in maximal heart rate and a general decrease in maximal stroke volume, which together reduce the body's peak aerobic capacity. Additionally, the arteries tend to become stiffer over time, which often leads to an increase in systolic blood pressure. While these changes are natural, regular physical activity can help to slow their progression and maintain cardiovascular health.

135. (B) Create a more optimal environment for the body's natural healing processes.
In a rehabilitation setting, therapeutic modalities such as heat, cold, and electrical stimulation are used to support the body's natural recovery process. Their primary purpose is to create an optimal environment for healing by managing pain, reducing excessive swelling, and improving local circulation and tissue extensibility. While they are not a replacement for active therapeutic exercise, these tools can help an athlete progress through the recovery stages more comfortably and effectively, facilitating the safe return to movement.

136. (B) Can exhibit autorhythmicity (contracts spontaneously).
While both cardiac and skeletal muscles are striated, they have several important differences in how they function. A key distinction is that cardiac muscle possesses autorhythmicity,

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meaning it has the innate ability to generate its own electrical impulses and contract spontaneously. Additionally, cardiac muscle cells are connected by intercalated discs that ensure the heart contracts as a coordinated unit. Unlike skeletal muscle, which is under voluntary control, the heart's activity is regulated by the autonomic nervous system to meet demands.

137. (C) Used for sprinting and jumping
Type I muscle fibers, also known as slow-twitch fibers, are specifically adapted for endurance and sustainability. They are characterized by a red color due to high myoglobin levels, a high density of mitochondria, and significant resistance to fatigue. These traits make them ideal for low-intensity, long-duration activities like maintaining posture. However, they are not the primary fibers used for sprinting and jumping; those explosive movements rely more on Type II fast-twitch fibers, which can produce force rapidly.

138. (B) Sarcolemma
The sarcolemma is the specialized cell membrane that surrounds each individual skeletal muscle fiber. It acts as a protective barrier and plays a critical role in the transmission of electrical signals, or action potentials, that trigger muscle contraction. The sarcolemma contains small openings that lead to the T-tubules, allowing the signal to penetrate deep into the fiber. This structure is essential for coordinating the activation of the contractile elements within the muscle cell and ensuring the entire fiber responds.

139. (C) The need to supply more oxygen and remove carbon dioxide.
The increase in the rate and depth of breathing during exercise is a vital physiological response to meet the body's changing metabolic needs. As physical activity becomes more intense, the muscles consume more oxygen and produce more carbon dioxide. The respiratory system adjusts to ensure that a greater volume of oxygen is delivered to the blood and that excess carbon dioxide is efficiently removed from the body. This regulation is primarily controlled by the brain monitoring blood gas levels.

140. (B) ATP and phosphocreatine.
Chronic anaerobic training, such as consistent sprinting or heavy resistance exercise, leads to specific adaptations that improve the body's ability to produce force rapidly. One key adaptation is an increase in the intramuscular stores of high-energy phosphates, specifically ATP and phosphocreatine. By having a larger immediate reservoir of these fuels, the muscles can sustain maximal effort for a slightly longer duration. This improvement in the phosphagen system capacity is essential for success in explosive sports and high-intensity activities.

141. (C) Acetylcholine
Acetylcholine is the primary chemical messenger used by the nervous system to communicate with skeletal muscles at the neuromuscular junction. When a nerve impulse reaches the end of a motor neuron, acetylcholine is released into the synaptic cleft. It then travels across the gap and binds to receptors on the muscle fiber's sarcolemma, triggering an electrical signal that leads to muscle contraction. This precise chemical relay is essential for the voluntary control of all skeletal movements.

142. (B) Carbohydrates, fats, and proteins.
The body derives the energy needed for physical activity through the breakdown of three primary macronutrients: carbohydrates, fats, and proteins. Carbohydrates are the preferred fuel for high-intensity efforts, while fats provide a sustainable and abundant energy source during low-to-moderate intensity exercise. Proteins, although primarily used for tissue repair and growth, can also serve as an energy source when other fuels are limited. Understanding how the body processes these nutrients is fundamental to optimizing athletic performance.

143. (C) Aerobic system
When the body is at rest, its energy requirements are relatively low and consistent. During this state, the aerobic energy system is almost exclusively responsible for providing the necessary ATP. By utilizing oxygen to break down primarily fats and some carbohydrates, the body can maintain its basic physiological functions efficiently and sustainably. This resting state reflects the baseline capacity of the cardiovascular and respiratory

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systems to deliver oxygen to the tissues and serves as the starting point for metabolic adjustments.

144. (B) Accumulation of H+ ions, interfering with enzyme activity and calcium binding.
Peripheral fatigue refers to exhaustion that originates within the muscle fiber itself rather than in the nervous system. A primary cause of this type of fatigue during intense exercise is the accumulation of hydrogen ions, which increases muscle acidity. This drop in pH can interfere with several critical processes, such as the activity of metabolic enzymes and the binding of calcium to troponin. These chemical changes directly impair the muscle's ability to contract effectively, leading to a decline in force.

145. (B) To provide the building blocks (amino acids) for muscle repair and synthesis.
Consuming protein as part of a post-exercise recovery strategy is essential for supporting muscle health and adaptation. Protein provides the necessary amino acids that serve as the building blocks for the repair of muscle tissues that may have been damaged during strenuous activity. Furthermore, protein intake stimulates the synthesis of new contractile proteins, which is the basis for muscle hypertrophy and strength gains. For athletes, timely protein consumption helps ensure that the body recovers effectively from training.

146. (B) Shivering and peripheral vasoconstriction to conserve heat.
When exposed to a cold environment, the body initiates several physiological responses to maintain its core temperature. These include peripheral vasoconstriction, which narrows the blood vessels near the skin to reduce heat loss, and shivering, which is a rapid, involuntary muscle contraction that generates heat through metabolic activity. These mechanisms are vital for protecting internal organs and preventing hypothermia. Understanding these responses is important for athletes as it influences their safety and performance when training in cold conditions.

147. (B) Similar to that of men.
When considering the relative improvements in muscle strength, research indicates that the trainability of biological females is very similar to that of biological males. While males typically have higher absolute strength due to larger muscle mass, the percentage increase in strength following a structured resistance training program is comparable between the two genders. This shows that female muscle tissue is just as responsive to the stress of exercise as male tissue. Recognizing this similar capacity is key for training.

148. (B) Decreasing the blood's oxygen-carrying capacity.
Iron-deficiency anemia is a significant physiological concern for some athletes, particularly females, as it can directly impair physical performance. Iron is an essential component of hemoglobin, the protein in red blood cells that transports oxygen to the tissues. A deficiency in iron leads to a decrease in the blood's oxygen-carrying capacity, meaning the muscles receive less oxygen to fuel aerobic metabolism. This can result in early fatigue, reduced endurance, and a general decline in athletic ability and recovery.

149. (A) The number of years a person lives free from chronic disease and disability.
In the context of healthful aging, the term healthspan refers to the number of years an individual lives in a state of good health, free from chronic diseases and physical disabilities. While lifespan measures total years of life, healthspan focuses on the quality of those years and the maintenance of functional independence. A primary goal of physical education and lifestyle management for older adults is to extend the healthspan, ensuring that individuals can remain active and capable during later years.

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150. (B) Increased awareness and blood flow to the muscles.
A pre-event massage is typically characterized by light, rapid, and stimulating techniques designed to prepare an athlete for upcoming physical activity. The physiological goals are to increase local blood flow to the muscles and to heighten the awareness and responsiveness of the nervous system. This invigorating approach helps to warm up the tissues and mentally prepare the athlete for competition. Unlike post-event massage, which focuses on relaxation, the pre-event style aims to energize the body and support performance.

151. (A) The measurement of maximal oxygen uptake (VO_2 max).
The measurement of maximal oxygen uptake, or VO_2 max, is widely recognized as the gold standard for assessing cardiorespiratory fitness. This test determines the maximum rate at which an individual can take in, transport, and utilize oxygen during increasingly intense exercise. A higher VO_2 max reflects a more efficient cardiovascular and muscular system. This metric is used by sports scientists and coaches to evaluate aerobic potential, track training effectiveness, and prescribe appropriate exercise intensities for health and conditioning.

152. (B) Both Statement I and Statement II are false.
Concentric and eccentric contractions are the two types of dynamic muscle actions that involve changes in muscle length. In a concentric contraction, the muscle generates force while shortening, such as the upward phase of a bicep curl. In contrast, an eccentric contraction occurs when the muscle produces tension while lengthening, which often happens when controlling the lowering of a weight. The statement provided reverses these fundamental definitions, as concentric involves shortening while eccentric involves lengthening during force production.

153. (A) Both A and R are true and R is the correct explanation of A.
The ATP-PC system is the body's fastest way to produce energy and is the primary source of ATP for the first few seconds of maximal physical effort. It relies on the rapid breakdown of stored phosphocreatine to regenerate ATP almost instantaneously. While this system provides incredible power, it has a very limited capacity because the muscle's stores of phosphocreatine are small and quickly depleted. Therefore, both the assertion about its initial role and the reasoning about its characteristics are correct.

154. (A) They ensure that the heart muscle contracts as a coordinated unit (a functional syncytium).
The unique structural features of cardiac muscle, such as its branching fibers and specialized junctions called intercalated discs, are essential for the heart's function. These intercalated discs allow electrical impulses to travel rapidly and seamlessly from one cell to the next. This ensures that the entire heart muscle contracts in a highly coordinated and simultaneous manner, acting as a functional syncytium. This synchronization is critical for pumping blood effectively out of the chambers to meet the body's various metabolic demands.

155. (B) A shift in fiber type characteristics from Type IIx towards Type IIa and Type I.
Chronic endurance exercise leads to specific structural and functional changes in skeletal muscle that improve its aerobic capacity. One key adaptation is a shift in fiber type characteristics where fast-twitch Type IIx fibers begin to take on the properties of more oxidative Type IIa or even Type I fibers. Additionally, endurance training increases mitochondrial density and the activity of aerobic enzymes within the muscle cells. These changes, along with increased capillarization, enhance the muscle's ability to utilize oxygen during prolonged physical activity.

156. (C) P-3, Q-1, R-4, S-2
Different proprioceptors are specialized to detect specific physical stimuli. Muscle spindles are located within the muscle belly and respond to changes in muscle length and the rate of stretch. Golgi tendon organs are found at the muscle-tendon junction and sense the amount of tension being produced. Joint receptors, such as Pacinian corpuscles, provide information about joint position and movement. Cutaneous receptors in the skin detect external stimuli like touch and temperature. Together, these receptors provide essential sensory feedback for movement coordination.

157. (B) Breakdown of glycogen to glucose.
Glycogenolysis is the physiological process of breaking down glycogen, which is the stored form of glucose in the liver and muscles. This process is essential for releasing glucose into the bloodstream or directly into the muscle cells to be used as fuel for energy production during physical activity or periods of fasting. By breaking down these complex carbohydrate stores, the body can maintain blood sugar levels and provide a steady supply of ATP to power the heart and active muscles.

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158. (D) Initial oxygen deficit at the start of exercise.
Excess Post-exercise Oxygen Consumption represents the additional oxygen the body uses after physical activity to return to its resting state. This includes tasks such as replenishing phosphocreatine stores, re-oxygenating the blood and myoglobin, and converting lactate back into glucose. However, the initial oxygen deficit that occurs at the very beginning of exercise is a separate concept. While the magnitude of the deficit can influence the size of the subsequent EPOC, the deficit itself is not a recovery phase process.

159. (B) (i), (ii), (iii), (v) only
Fatigue is a complex phenomenon involving both peripheral and central components. Peripheral fatigue happens within the muscle fibers, while central fatigue originates in the nervous system. During long activities, the depletion of muscle glycogen is a major cause of exhaustion. Additionally, the buildup of inorganic phosphate can impair how well the muscle fibers interact. While lactate is often discussed, it is actually the associated increase in hydrogen ions, rather than the lactate itself, that is primarily linked to muscle fatigue causes.

160. (B) Progressively increase the duration and intensity of training in the heat over several days.
To safely and effectively adapt to exercising in hot conditions, an athlete should follow a structured acclimatization program. This involves gradually increasing both the duration and the intensity of training sessions conducted in the heat over a period of 10 to 14 days. This progressive exposure allows the body to make necessary physiological adjustments, such as starting to sweat earlier and increasing the overall sweat rate. Proper hydration is also essential during this process to support cooling and prevent illnesses.

161. (B) Males having a larger average heart size.
The observed differences in resting heart rate and stroke volume between biological males and females are primarily due to average differences in heart size. Males typically have a larger heart, particularly a larger left ventricular chamber, which allows them to pump a greater volume of blood with each contraction. Because of this superior stroke volume, a male's heart can maintain the necessary resting cardiac output with fewer beats per minute than a female's heart, which must beat more frequently.

162. (A) (i), (iii), (ii), (iv)
The process that links a neural signal to a muscle contraction follows a precise sequence of events. First, an action potential travels along the sarcolemma and down into the fiber via the T-tubules. This signal triggers the sarcoplasmic reticulum to release stored calcium ions. The calcium then binds to troponin, which causes tropomyosin to shift and expose the binding sites on actin. Finally, the myosin cross-bridges can attach to the actin filaments and perform the power stroke, resulting in contraction.

163. (B) Regular resistance training can lessen the loss of muscle mass and strength.
While some decline in physical function is a natural part of growing older, many of these changes can be significantly lessened through a healthy and active lifestyle. Specifically, engaging in regular resistance training is an effective way to counteract sarcopenia and slow the loss of muscle mass and strength. Maintaining musculoskeletal health through exercise helps seniors remain independent and capable of performing daily activities. This highlights the importance of physical activity as a powerful tool for promoting healthful aging.

164. (B) Safely and effectively restore the function of the injured part to the greatest possible degree.
The primary objective of any rehabilitation program following an athletic injury is to safely and effectively restore the function of the injured area to the highest possible level. This involves a structured approach that includes managing pain and swelling, restoring range of motion, and progressively rebuilding strength and coordination. The ultimate goal is to return the athlete to their sport with a minimal risk of re-injury. Successful rehabilitation requires a careful balance between pushing for progress and allowing tissues time to heal.

165. (C) Break down adhesions and scar tissue in deeper tissues.
Friction is a specialized massage technique that involves applying deep, localized, and often circular pressure to specific tissues. Unlike superficial strokes, friction is intended to reach

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circulation. By milking metabolic waste products out of the muscles and improving the delivery of nutrients, pétrissage helps to reduce muscle tension and the severity of soreness after intense activity. This promotes faster recovery for future training sessions and competitions.

180. (A) Provides a scientific rationale for curriculum design and teaching methods.
Exercise physiology is a foundational science in physical education because it provides the scientific evidence needed to design safe and effective programs. By understanding how the body's various systems respond and adapt to physical activity, educators can develop curricula that appropriately challenge students while promoting health and wellness. This knowledge allows for the creation of inclusive programs that account for different developmental stages, ensuring that physical education is both educational and beneficial for the long-term well-being of participants.

181. (B) Cardiac output increases to meet the heightened oxygen demand.
When an individual begins to exercise, the cardiorespiratory system must rapidly adjust to meet the sudden increase in the muscles' demand for oxygen and energy. One of the most immediate responses is an increase in cardiac output, which is achieved through higher heart rates and larger stroke volumes. Additionally, the body redistributes blood flow, shunting it toward the active skeletal muscles and away from non-essential organs. These changes ensure that necessary fuel is delivered, allowing the body to sustain activity.

182. (B) An increase in the number and size of mitochondria within the muscle fibers.
Long-term endurance training leads to significant changes within the muscle cells that enhance their ability to perform aerobic activities. A major adaptation is a substantial increase in both the number and the size of mitochondria, the organelles responsible for producing ATP using oxygen. Additionally, there is an increase in the concentration of aerobic enzymes and myoglobin. Together, these changes improve the muscle's efficiency in utilizing oxygen and breaking down fuels, allowing the athlete to maintain a higher exercise intensity.

183. (B) (ii) and (iii) only.
The neural control of muscle function relies on several fundamental principles. The all-or-none law states that once a motor unit is activated, all its fibers contract with maximum force. To produce different levels of force in a whole muscle, the nervous system uses force gradation, which involves varying both the number of motor units recruited and the frequency of their firing. While motor units are the functional components, it is important to remember that a motor unit contains many fibers.

184. (D) Statement I is false, but Statement II is true.
The human body uses different energy systems depending on the intensity and duration of the physical activity. The anaerobic systems, which include the ATP-PC and glycolytic pathways, can produce energy very rapidly but have a very limited capacity, making them suitable only for short bursts of high-intensity effort. In contrast, the aerobic energy system produces ATP more slowly but has a much larger, nearly unlimited capacity. This makes the aerobic system the primary source of energy for sustained endurance activities.

185. (A) Both A and R are true and R is the correct explanation of A.
Performing a light active cool-down after intense exercise is an effective strategy for speeding up the recovery process. This low-intensity activity helps to maintain an elevated level of blood flow to the muscles, which facilitates the transport of lactate away from the tissues and toward the liver and heart. In these organs, the lactate can be converted back into glucose or used as a direct energy source. Therefore, active recovery is physiologically more beneficial for clearing metabolic byproducts than rest.

186. (A) Irreversible loss of bone mineral density.
A critical health risk for women affected by the female athlete triad is the irreversible loss of bone mineral density. This occurs because the combination of low energy availability and menstrual dysfunction leads to a significant decrease in estrogen levels. Estrogen is essential for maintaining bone strength, and its absence causes the bones to become fragile and brittle. This increased fragility significantly raises the risk of stress fractures and can lead to long-term

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capacity, making it the primary system for activities lasting more than a few minutes. Because it produces water and carbon dioxide as harmless byproducts, it is ideal for sustaining prolonged, moderate-intensity exercise such as distance running or cycling over long periods.

173. (B) The elevated oxygen consumption required post-exercise to restore the body to its resting state.
Recovery oxygen, more formally known as Excess Post-exercise Oxygen Consumption, represents the elevated level of oxygen uptake that persists after physical activity has finished. This additional oxygen is required to return the body to its resting state and perform several vital tasks. These include replenishing the muscle's stores of ATP and phosphocreatine, re-oxygenating the blood and myoglobin, and clearing out metabolic byproducts like lactate. The magnitude of EPOC is directly related to the exercise intensity and duration.

174. (B) Increased production of red blood cells after prolonged exposure.
When exposed to a high-altitude environment, the body must adjust to the lower availability of oxygen caused by reduced atmospheric pressure. A primary physiological response to prolonged exposure is an increase in the production of red blood cells. This adaptation increases the total amount of hemoglobin in the blood, which enhances its capacity to transport oxygen to the working tissues. While initial responses include increased breathing, this long-term change is essential for maintaining physical performance and health in hypoxic conditions.

175. (A) Virtually non-existent.
While biological males typically have greater absolute strength than biological females due to larger total muscle mass, the quality of the muscle tissue itself is very similar between the genders. When strength is expressed relative to the cross-sectional area of the muscle, the differences between males and females essentially disappear. This indicates that an equal amount of muscle tissue can produce an equal amount of force regardless of gender. Understanding this concept is important for recognizing the inherent potential of athletes.

176. (A) It helps to slow down or prevent the loss of bone mineral density (osteoporosis).
Regular weight-bearing exercise is highly recommended for older adults as a primary strategy for promoting healthy aging. Activities like walking or resistance training place a beneficial stress on the bones, which stimulates the body to maintain its bone mineral density. This is essential for preventing osteoporosis and reducing the risk of fractures, which can be devastating for seniors. By keeping the skeleton strong, weight-bearing exercise helps individuals maintain their mobility, independence, and overall quality of life as they age.

177. (B) The current stimulates large-diameter sensory nerves, which "closes the gate" to pain signals carried by smaller nerves.
Transcutaneous electrical nerve stimulation is a popular modality for managing pain in athletic settings. According to the Gate Control Theory, the electrical current from the TENS unit stimulates large-diameter sensory nerves that carry non-painful signals. This activity closes the gate in the spinal cord, preventing pain signals from smaller nerves from reaching the brain. By interfering with how the brain perceives pain, TENS can provide relief for acute and chronic conditions without the need for systemic medications.

178. (B) Pharmacological aids
Pharmacological ergogenic aids are a category of performance-enhancing substances that include various drugs and synthetic hormones. Anabolic steroids and human growth hormone are well-known examples that are used to increase muscle mass, strength, and recovery rates. These substances work by directly altering the body's internal chemistry and metabolic processes. Because they can provide an unfair advantage and pose significant risks to long-term health, their use is strictly prohibited in competitive sports. Understanding these aids is essential for athletic integrity.

179. (B) To "milk" the muscle of metabolic wastes and increase circulation.
For an athlete like a cyclist, the use of pétrissage on the large muscle groups of the legs can be highly beneficial for recovery. This kneading and squeezing manipulation helps to deeply stimulate the tissues, increasing both blood and lymphatic

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194. (C) A gymnast's muscle spindles and GTOs signaling body position during a balance beam routine.
A gymnast performing a balance beam routine provides a perfect example of how the body uses kinesthetic sense organs for motor control. As the gymnast moves, specialized receptors like muscle spindles and Golgi tendon organs constantly send information to the brain about the position and tension of their muscles and joints. This real-time feedback allows the central nervous system to make the tiny, rapid adjustments needed to maintain balance and coordinate complex movements without the gymnast looking at their limbs.

195. (B) (iii), (i), (ii)
At the beginning of any all-out exercise, the body transitions through different energy systems based on their speed and capacity. For the first few seconds, the ATP-PC system is the dominant provider of ATP. As the activity continues beyond ten seconds, anaerobic glycolysis becomes the primary pathway, providing energy for the next couple of minutes. If the activity persists for three minutes or more, the aerobic system gradually becomes the most significant contributor as the body adjusts oxygen delivery.

196. (A) Prevents blood from pooling in the extremities and facilitates lactate clearance.
An active cool-down is beneficial for recovery because it helps prevent blood from pooling in the lower extremities after strenuous exercise. By maintaining a low level of muscle activity, the body continues to facilitate venous return to the heart. Furthermore, the continued blood flow enhances the transport and clearance of metabolic byproducts like lactate from the muscles. This process helps the body return to its resting state more efficiently and can reduce the degree of muscle stiffness after training.

197. (B) Hypothalamus
The hypothalamus is a small but vital region of the brain that acts as the body's primary thermostat. It is responsible for regulating core temperature by monitoring the temperature of the blood and receiving signals from sensors in the skin. When the body becomes too hot or too cold, the hypothalamus initiates appropriate responses, such as sweating and vasodilation to lose heat, or shivering and vasoconstriction to conserve it. This constant regulation is essential for maintaining homeostasis during physical exertion.

198. (B) The absence or cessation of normal menstrual function.
Within the context of the female athlete triad, amenorrhea refers to the absence or cessation of normal menstrual function. This condition is often a sign of physiological stress caused by an imbalance between the energy consumed and the energy expended through intense training. When energy availability is low, the body suppresses reproductive hormones to conserve energy for more essential functions. This hormonal disruption not only stops menstruation but also leads to other serious issues such as decreased bone density.

199. (B) Resistance training
For older adults, resistance training is a critical component of a lifestyle management program aimed at preserving functional ability. This type of exercise specifically helps to maintain the muscle mass and strength needed to perform activities of daily living, such as carrying groceries, climbing stairs, or getting up from a chair. By counteracting the natural age-related loss of muscle, resistance training helps seniors maintain their physical independence and reduces the risk of falls. It is a powerful tool for aging.

200. (B) Decreasing the metabolic rate of the surrounding cells, thus reducing their need for oxygen.
Applying ice to an acute injury is an effective way to limit what is known as secondary hypoxic injury. When tissues are damaged, the surrounding healthy cells may suffer from a lack of oxygen due to disrupted blood flow and increased pressure from swelling. By cooling the area, cryotherapy decreases the metabolic rate of these surrounding cells, which in turn reduces their immediate need for oxygen. This helps to minimize further tissue death and limits the overall extent of injury.

201. (B) Blood doping
Ergogenic aids are classified into several categories based on how they influence performance. Blood doping is considered a physiological aid

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skeletal issues that persist throughout a woman's life.

187. (B) Increased maximal aerobic capacity (VO_2 max).
The natural aging process is associated with several predictable physiological changes that can affect physical performance and safety. These include a decrease in nerve conduction velocity, a reduction in overall muscle strength and power, and an increase in the stiffness of connective tissues. However, it is incorrect to say that aging leads to an increase in maximal aerobic capacity. In fact, VO_2 max typically declines with age as the heart's maximum rate and the muscles' ability to utilize oxygen decrease.

188. (C) TENS : Pain modulation via Gate Control Theory
Therapeutic modalities are selected based on their specific physiological effects on the body. Transcutaneous electrical nerve stimulation is primarily used for pain modulation through the mechanism described by the Gate Control Theory. By stimulating large-diameter sensory nerves, TENS can block or reduce the transmission of pain signals to the brain. In contrast, thermotherapy is used for vasodilation, and cryotherapy is used for vasoconstriction. Correctly matching these tools to their physiological roles is essential for effective injury management and recovery.

189. (A) An ergogenic aid has a real physiological effect, while a placebo effect is based on belief.
The fundamental difference between an ergogenic aid and a placebo lies in their actual physiological impact. An ergogenic aid is a substance or technique that has been scientifically shown to produce a real, measurable change in the body's systems to enhance performance. A placebo, on the other hand, is an inert substance or treatment that has no direct physiological effect. Any benefit observed from a placebo is entirely due to the user's belief and psychological expectation of improvement during performance.

190. (B) P-3, Q-1, R-4, S-2
Different massage techniques involve distinct physical actions designed to achieve specific physiological results. Effleurage consists of long, gliding strokes that help warm the tissues and improve circulation. Pétrissage uses kneading and squeezing movements to work deeper into the muscles. Friction involves deep, circular pressure applied to a small area to address knots and scar tissue. Tapotement is a series of rapid percussion or tapping motions used to stimulate the nervous system. Matching these techniques correctly is essential for effective treatment.

191. (B) Actin and Myosin
The ability of a muscle fiber to contract and produce force is primarily due to the presence of two key contractile proteins: actin and myosin. Myosin forms the thick filaments of the sarcomere and has specialized heads that attach to the thinner actin filaments. During contraction, these heads pull the actin filaments toward the center, causing the entire muscle to shorten. While other regulatory proteins like troponin control this interaction, it is the physical movement of actin and myosin that generates tension.

192. (B) (iii) and (iv) only
According to the sliding filament theory, muscle contraction involves the movement of filaments within the sarcomere to produce force. During this process, the myosin heads attach to the actin filaments to form cross-bridges. As the filaments slide past each other, the width of the H-zone narrows and the overall length of the sarcomere decreases, pulling the Z-lines closer together. It is important to note that the length of the individual actin and myosin filaments themselves does not change.

193. (C) An enhanced capacity of the anaerobic glycolytic system.
High-intensity interval training involves short bursts of near-maximal effort followed by brief periods of rest. This type of training primarily stresses the anaerobic energy systems and leads to specific adaptations within the muscles. One major result is an enhanced capacity of the anaerobic glycolytic system, which includes an increase in the activity of enzymes responsible for breaking down glycogen without oxygen. These changes allow the athlete to produce energy more rapidly and maintain high-intensity performance for slightly longer time periods.

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deeper layers of muscle, tendons, and ligaments. Its primary physiological purpose is to help break down adhesions, scar tissue, and knots that may have formed due to injury or chronic overuse. By promoting better tissue alignment and increasing local circulation, friction can help restore normal movement patterns and improve overall flexibility.

166. (B) An increase in left ventricular muscle mass and chamber volume.
Consistent endurance training leads to significant structural changes in the heart that enhance its efficiency and capacity. One of the most important chronic adaptations is an increase in the thickness of the left ventricular muscle wall and an expansion of the chamber's volume. This allows the heart to hold more blood and pump it out with greater force, resulting in a higher maximal stroke volume. These changes enable the cardiovascular system to deliver oxygen more effectively to muscles during intense activity.

167. (B) It is non-striated and lines the walls of internal organs like the intestines.
Smooth muscle is a distinct type of muscle tissue that is found in the walls of various internal organs such as the stomach, intestines, and blood vessels. It is characterized by its non-striated, uniform appearance under a microscope. Smooth muscle contractions are involuntary, meaning they are not under conscious control, and are instead regulated by the autonomic nervous system. This muscle type is designed for slow, sustained contractions that help move substances through the body's internal passages.

168. (B) The actin and myosin filaments sliding past each other.
The sliding filament theory is the fundamental model used to explain how skeletal muscles contract to produce force and movement. According to this theory, contraction occurs when the thin actin filaments and the thick myosin filaments slide past each other, increasing their degree of overlap. Crucially, the filaments themselves do not change in length; instead, they move in a way that shortens the entire sarcomere. This microscopic movement, when repeated across many fibers, results in the visible muscle contraction.

169. (B) The proportion of fiber types can influence an individual's potential for success in certain types of events.
The distribution of different muscle fiber types in an individual can significantly influence their potential for success in various types of sports. Elite athletes in explosive, short-duration events like sprinting often possess a higher proportion of fast-twitch fibers, which generate force rapidly but fatigue quickly. In contrast, elite endurance athletes, such as marathon runners, tend to have a higher percentage of slow-twitch fibers that are more resistant to fatigue. This underlying physiological makeup provides a foundation for specific athletic abilities.

170. (D) Increased synthesis of contractile proteins (actin and myosin), leading to hypertrophy.
Chronic participation in a resistance training program leads to several muscular adaptations that increase force production. The most prominent change is muscle hypertrophy, which is the increase in the size of individual muscle fibers. This occurs as the muscle cells synthesize more contractile proteins, specifically actin and myosin, increasing their overall cross-sectional area. While neural improvements are important early on, this structural growth is responsible for the long-term gains in strength and power, allowing the body to handle heavier loads.

171. (B) Neuromuscular junction
The neuromuscular junction is the specialized synapse where a motor neuron communicates with a skeletal muscle fiber. This junction is critical for the voluntary control of movement. When an electrical impulse reaches the end of the neuron, it triggers the release of a chemical neurotransmitter called acetylcholine into the gap between the cells. The acetylcholine then binds to receptors on the muscle fiber, initiating the process that leads to contraction. Any disruption here can significantly impair the body's movements.

172. (C) Slow but high-capacity ATP production using oxygen.
The aerobic energy system is the body's most efficient way to produce ATP, utilizing oxygen to break down carbohydrates and fats. While it has a slower rate of energy production compared to anaerobic pathways, it has a virtually unlimited

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because it directly alters a natural body process to enhance performance. Specifically, it increases the total volume of red blood cells to improve oxygen transport. In contrast, caffeine and steroids are pharmacological aids, and running shoes are a mechanical aid. Understanding these distinctions is important for researchers and sports organizations when evaluating the legality and safety of various techniques used.

202. (C) Its scope is limited only to the study of professional athletes.
Exercise physiology is a broad and essential field with a scope that extends far beyond the study of professional athletes. It provides the scientific basis for understanding how all human bodies adapt to physical activity and environmental stresses. Furthermore, it plays a critical role in developing exercise prescriptions for health maintenance and the prevention and treatment of various chronic diseases. While it helps elite athletes, its primary value lies in its application to a wide range of human populations.

203. (B) By increasing end-diastolic volume, which leads to a more forceful contraction.
The Frank-Starling mechanism is a fundamental physiological principle that explains how the heart increases its stroke volume during exercise. As more blood returns to the heart, the walls of the ventricles are stretched more than at rest. This increased end-diastolic volume causes the cardiac muscle fibers to contract more forcefully during the subsequent beat. This automatic adjustment allows the heart to pump out all the extra blood it receives, ensuring that cardiac output meets the increased metabolic demands.

204. (C) It is under voluntary control.
Skeletal muscle tissue is uniquely designed for the production of voluntary body movements. One of its most defining characteristics is that it is under conscious, or voluntary, control by the somatic nervous system. Unlike cardiac and smooth muscle, which function automatically, skeletal muscles require a direct signal from the brain to contract. Furthermore, skeletal muscle is striated and typically attached to bones by tendons. These features allow for the precise and powerful movements needed for sports and daily life.

205. (B) The arrival of an action potential at the T-tubules.
In the process of muscle contraction, the release of calcium ions is a critical step that links the neural signal to actual movement. This release is triggered when an action potential travels along the muscle's sarcolemma and reaches the T-tubules. These tubules transmit the electrical signal deep into the fiber, where it causes specialized channels in the sarcoplasmic reticulum to open. The stored calcium then floods into the sarcoplasm, where it can bind to troponin and allow contraction.

206. (B) Type IIa
Type IIa muscle fibers possess a unique blend of characteristics that make them ideal for middle-distance sports. These fibers can produce force more rapidly than slow-twitch fibers but have a higher resistance to fatigue than the purely glycolytic Type IIx fibers. For events like 800-meter running or 200-meter swimming where both speed and some degree of sustainability are required, an athlete with a higher proportion of these intermediate fibers would likely have a natural advantage in maintaining a fast pace.

207. (A) Neural adaptations.
When a person first begins a weight training program, they often experience rapid increases in strength during the first several weeks. These early gains are primarily attributable to neural adaptations rather than actual changes in muscle size. The nervous system becomes more efficient at recruiting existing motor units, increasing their firing rates, and improving the coordination of the muscles involved. It is only after this initial phase of neural learning that significant muscular hypertrophy begins to contribute to strength improvements.

208. (B) Hydrogen ions (H+) from lactate production
During maximal, short-duration exercise, the body relies heavily on anaerobic pathways to produce energy. A primary byproduct of this process is the accumulation of hydrogen ions, which leads to an increase in muscle acidity. This drop in pH is closely associated with the onset of fatigue as it interferes with the chemical processes required for muscle contraction and energy production. While other factors play a role, the

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birth. However, consistent training can induce certain physiological adaptations that influence how these fibres function. While the basic ratio is genetically set, specific training regimens can enhance the aerobic or anaerobic capabilities of the existing fibres, thereby affecting an athlete's potential performance in different sports.

271. (C) Neuro-muscular junction.
The neuro-muscular junction is the specialized site where the terminal end of a motor neuron meets a muscle fibre. This connection is essential for the transmission of signals from the nervous system to the muscular system. When an electrical impulse reaches this junction, it triggers the chemical processes that ultimately lead to the contraction of the targeted muscle fibres.

272. (B) Acetylcholine.
Acetylcholine is the primary neurotransmitter responsible for relaying signals across the synaptic cleft at the neuro-muscular junction. When an action potential reaches the axon terminal, this chemical is released into the gap between the neuron and the muscle. Its subsequent binding to receptors on the muscle fibre's membrane is the key step that initiates the process of muscular contraction.

273. (D) the opening of ion channels and influx of sodium ions.
When acetylcholine binds to its specific receptors on the sarcolemma, it triggers the opening of ion channels. This action allows sodium ions to rush into the muscle cell, causing a change in the electrical charge of the membrane known as depolarization. This depolarization generates a new action potential that travels along the muscle fibre, eventually leading to the contraction.

274. (A) provide sensory feedback about muscle status to the CNS.
Kinesthetic sense organs, including muscle spindles, serve as vital proprioceptors that monitor the state of the muscles. They provide the central nervous system with real-time feedback regarding muscle length and the speed of changes. This continuous stream of sensory information allows the brain to coordinate movements accurately, make necessary adjustments, and refine motor skills during various physical activities.

275. (C) regulate muscle tension and prevent injury.
Golgi tendon organs are proprioceptors that specifically monitor the tension within a muscle. Their primary function is to provide feedback that helps the central nervous system regulate force and prevent potential damage from excessive tension. If these organs are disrupted, an athlete would lose a critical protective mechanism, significantly impairing their ability to control muscle tension and avoid musculoskeletal injuries.

276. (A) The anaerobic system.
During high-intensity and short-duration events like a 100-meter sprint, the anaerobic system is the dominant provider of energy. This system operates without oxygen, utilizing stored phosphocreatine and glucose to regenerate ATP rapidly. Because the energy demand is immediate and extreme, the body must rely on these fast-acting pathways rather than the slower, oxygen-dependent aerobic system to power the movement.

277. (D) use of oxygen to metabolize fuel sources.
The aerobic energy system is defined by its requirement for oxygen to break down carbohydrates, fats, and proteins. This process occurs within the mitochondria and produces a large amount of ATP, making it highly efficient for long-term energy needs. It is the primary system used during rest and for any physical activities that are performed at low-to-moderate intensities.

278. (B) oxygen consumption and carbon dioxide production.
Indirect calorimetry is a common method used to estimate energy expenditure by measuring gas exchange at the lungs. By calculating the amount of oxygen consumed and carbon dioxide produced, researchers can determine the metabolic rate of an individual. This method is based on the physiological principle that oxygen uptake is directly proportional to the amount of energy the body uses.

279. (C) aerobic system.
When the body is in a state of rest, the aerobic system acts as the primary provider of energy. Since the metabolic demand is low, there is sufficient oxygen available to meet all ATP

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is intended to produce beneficial physiological responses. The heat causes local vasodilation, which increases blood flow and metabolic activity in the underlying tissues. This rise in temperature helps to reduce muscle spasms and increase the extensibility of collagen fibers, making tissues more flexible. These effects are useful for decreasing joint stiffness and preparing muscles for an effective and safer stretching session.

217. (B) Increasing the muscle's carnosine content, which enhances its buffering capacity.
Beta-alanine is a popular ergogenic aid used to enhance performance in high-intensity activities. Its primary mechanism of action is increasing the concentration of carnosine within the skeletal muscles. Carnosine is a dipeptide that acts as a natural buffer, helping to neutralize the excess hydrogen ions that accumulate during intense anaerobic exercise. By improving the muscle's buffering capacity, beta-alanine helps to maintain a more stable pH, which can delay fatigue and allow athletes to sustain high-power efforts.

218. (B) Soothe the nervous system and enhance fluid return.
Concluding a massage session with long, flowing strokes of effleurage serves several important physiological purposes. These gentle movements help to soothe the nervous system, promoting a state of relaxation and easing any lingering muscle tension. Furthermore, the stroking action facilitates venous and lymphatic return, helping to move fluids toward the heart and enhance the removal of metabolic waste products. This final stage helps the body transition from deeper therapeutic work back toward its resting state effectively.

219. (B) A physical education teacher developing a fitness unit based on the principle of progressive overload.
Developing a fitness unit based on the principle of progressive overload is an excellent example of applying exercise physiology in an educational setting. This principle states that physiological systems must be challenged beyond their normal levels to achieve improvement. By structured and gradually increasing the difficulty of exercises, a teacher can ensure that students' bodies adapt and their fitness levels increase safely. This evidence-based approach is much more reliable for achieving positive health outcomes than choosing activities randomly.

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220. (A) Both Statement I and Statement II are true.
Cardiovascular drift is a phenomenon seen during prolonged, steady-state exercise, especially in warm conditions, where heart rate gradually increases while stroke volume decreases. This happens primarily because sweating leads to a reduction in plasma volume which decreases blood returning to the heart. Additionally, as core temperature rises, more blood is shunted to the skin for cooling. To maintain cardiac output despite a lower stroke volume, the heart must beat more frequently. Therefore, both statements about drift are correct.

221. (C) A is true but R is false.
Regular endurance exercise is well-known to increase the density of mitochondria within skeletal muscle fibers. This adaptation is a key factor in improving aerobic capacity as mitochondria are the primary sites for producing ATP using oxygen. However, the reasoning provided is incorrect; increased mitochondrial density improves the muscle's capacity for aerobic metabolism, not anaerobic glycolysis. Therefore, while the assertion about the adaptation is true, the reason given to explain its function is false regarding the pathway.

222. (D) Extensibility
Extensibility is a fundamental property of muscle tissue that refers to its ability to be stretched or extended beyond its normal resting length without being damaged. This characteristic allows muscles to accommodate various ranges of motion required for different physical activities. While contractility allows muscles to shorten and produce force, and elasticity allows them to return to their original shape, extensibility ensures they are pliable enough to move smoothly. Maintaining good extensibility is essential for joint flexibility.

223. (C) It binds to troponin, causing tropomyosin to shift and expose the actin binding sites.
Calcium ions play a critical role as messengers in the mechanism of muscle contraction. When an electrical signal reaches the interior of a muscle fiber, calcium is released from the sarcoplasmic reticulum. These ions then bind to a regulatory

build-up of these ions is a major determinant of exercise performance duration.

209. (B) Direct calorimetry
Direct calorimetry is a precise method for measuring the body's energy expenditure by quantifying the total amount of heat it produces. This technique typically requires an individual to perform an activity within a specialized, thermally isolated chamber. The heat released by the person's body is absorbed by water or air moving through the walls and the resulting change in temperature is measured. Because energy used eventually turns into heat, this method provides an accurate assessment of the metabolic cost.

210. (C) Elevated body temperature and circulating hormones.
The slow component of Excess Post-exercise Oxygen Consumption refers to the elevated oxygen uptake that persists for a longer period after physical activity ends. Unlike the fast component, which quickly restores immediate energy stores, the slow component is responsible for processes like managing elevated body temperature and supporting continued high rates of heart and breathing activity. Circulating hormones also play a role in maintaining this increased metabolic state. This phase is necessary to return systems to baseline levels.

211. (D) Carbohydrate
To effectively restore muscle glycogen stores after a prolonged and strenuous workout, the most critical nutritional component is carbohydrate. Following exercise, the body's capacity to synthesize glycogen is at its peak, and consuming carbohydrates provides the necessary glucose to refill these essential energy reservoirs. While other nutrients are important for muscle repair, it is the intake of carbohydrates that directly determines the rate and extent of glycogen recovery. Timely carbohydrate consumption is vital for performance and fatigue prevention.

212. (B) Peripheral vasoconstriction
The body's first and most immediate physiological response to maintain its core temperature when exposed to cold is peripheral vasoconstriction. This process involves the narrowing of the blood vessels located near the skin's surface, which significantly reduces the amount of blood—and therefore heat—that is lost to the external environment. By shunting more blood toward the core, the body can protect its vital internal organs. This initial adjustment is a critical part of the body's thermoregulatory strategy.

213. (B) The difference is significantly reduced.
While biological males generally have a higher maximal oxygen uptake than biological females in absolute terms, a significant portion of this difference is due to variations in body composition. Females typically have a higher percentage of body fat which is metabolically inactive tissue. When VO_2 max is expressed relative to lean body mass rather than total body weight, the gap between the genders is significantly reduced. This highlights that the aerobic capacity of muscle tissue is quite comparable.

214. (D) Iron-deficiency anemia
The female athlete triad is a clinical condition characterized by three specific and interrelated components: low energy availability, menstrual dysfunction such as amenorrhea, and low bone mineral density which can lead to osteoporosis. These factors are closely linked through hormonal and metabolic pathways. While iron-deficiency anemia is a common and important health concern for many female athletes, it is not considered one of the three primary components of this specific syndrome. Understanding the triad is essential.

215. (B) Training that challenges proprioception and includes dynamic movements.
For older adults, reducing the risk of falls is a primary goal of any lifestyle management program. The most effective training for this purpose involves exercises that challenge the body's proprioception and include dynamic, multi-directional movements. By practicing activities that require coordination and balance, such as standing on one leg, seniors can improve the communication between their nervous system and muscles. This training enhances the ability to make rapid adjustments and maintain stability during daily physical tasks.

216. (C) Increased tissue temperature and extensibility.
In a physical therapy or rehabilitation setting, applying a hot pack to an area like the lower back

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regarding sports participation should be based on an individual's own abilities rather than generalizations. Promoting inclusive athletic opportunities ensures all people can benefit from activity.

231. (B) Sarcopenic obesity
Sarcopenic obesity is a specific condition that can occur as part of the aging process, characterized by the simultaneous loss of skeletal muscle mass and an increase in body fat. This combination is particularly detrimental to health because it increases physical frailty while also raising the risk of metabolic issues like diabetes and cardiovascular disease. Individuals with sarcopenic obesity face greater challenges with mobility and independence. Regular resistance training and proper nutrition are essential strategies for managing this complex issue.

232. (B) Thermotherapy increases local metabolic rate.
Understanding the physiological effects of different therapeutic modalities is essential for their safe and effective use in rehabilitation. Thermotherapy, or the application of heat, increases the local metabolic rate and causes vasodilation which improves blood flow to the area. In contrast, cryotherapy uses cold to cause vasoconstriction and reduce the metabolic rate, helping to manage swelling and pain. These modalities are chosen based on the specific needs of the injury and the stage of the physiological healing process.

233. (B) Stimulate muscle and bone growth.
Human Growth Hormone is classified as a pharmacological ergogenic aid because of its powerful effects on the body's tissues. It works by stimulating the growth of bone and skeletal muscle and promoting the synthesis of proteins. Additionally, HGH can influence metabolism by increasing the utilization of fats for energy. While it is naturally produced by the body, the use of synthetic HGH to enhance performance is strictly prohibited. Misuse can lead to serious complications and health risks.

234. (C) Stimulate the muscles and nervous system, increasing local blood flow.
The primary goal of using tapotement, a rhythmic percussion technique, during a pre-event massage is to stimulate both the muscular and nervous systems. These rapid, tapping movements help to increase local blood circulation and heighten the responsiveness of the muscle spindles. This stimulating effect helps to warm up the body and mentally prepare the athlete for the upcoming competition. Unlike deeper massage techniques that promote relaxation, tapotement is designed to energize tissues and support high-intensity activity.

235. (C) The muscles are extracting more oxygen from the blood that passes through them.
The arteriovenous oxygen difference is a key metric in exercise physiology that measures how effectively the muscles extract oxygen from the blood. During physical activity, this difference increases significantly. This is because active skeletal muscles require more oxygen to fuel aerobic metabolism and are able to pull a larger percentage of it from the circulating blood. As a result, venous blood returning to the heart has a much lower oxygen content than arterial blood. Extraction is a critical endurance factor.

236. (B) An increase in stroke volume allows the heart to deliver the same cardiac output with fewer beats.
Resting bradycardia, or a significantly lower resting heart rate, is a common and beneficial adaptation found in endurance-trained athletes. This occurs primarily because long-term aerobic exercise increases the heart's stroke volume through improvements in chamber size and muscle contractility. With a larger amount of blood pumped per beat, the heart can deliver the same total cardiac output with fewer beats per minute. This increased efficiency reduces the overall workload on the heart at rest and reflects training adaptations.

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237. (C) Myofibril
The myofibrils are the specialized, rod-like structures within a muscle fiber that contain the actual contractile elements of the cell. They are composed of repeating units called sarcomeres which house the thick and thin myofilaments made of the proteins myosin and actin. These filaments interact during contraction to produce force and movement. While other structures support this process, it is within the myofibrils that the physical work of shortening the muscle

252. (A) tailor interventions and monitor training load for individuals.
Applying the principles of exercise physiology enables coaches and educators to analyze specific physiological parameters for individual athletes. This detailed analysis allows for the customization of training interventions to meet personal needs. Furthermore, monitoring the training load helps in facilitating efficient recovery and optimizing overall performance, ensuring that the physical activity is both safe and effective for everyone.

253. (C) the professionalization of physical education through a scientific basis.
Integrating exercise physiology into sports has transformed the field of physical education into a science-based profession. By clarifying the mechanisms behind fatigue and the role of different energy systems, this scientific approach replaces intuitive or trial-and-error methods. This shift ensures that athletic training and education are grounded in objective data, leading to greater professionalization and consistency.

254. (D) both acute and chronic physiological responses to exercise.
The field of exercise physiology investigates how the human body reacts to physical activity across two distinct timeframes. It examines acute responses, which occur immediately during or after a single session of exercise, as well as chronic adaptations that develop over time with consistent training. Understanding both levels is crucial for analyzing the body's comprehensive reaction to physical stress.

255. (C) ensuring safe and effective long-term athlete development.
Analyzing physiological parameters is fundamental for guiding athletes through a long-term development process that is both safe and effective. This scientific understanding allows coaches to maximize an athlete's potential while minimizing the risks of injury or overtraining. By targeting specific physiological outcomes, the discipline ensures that training remains productive and sustainable throughout an individual's entire athletic career.

256. (B) The development of cardiac hypertrophy.
Long-term endurance training leads to significant structural changes in the heart, most notably the development of cardiac hypertrophy. This adaptation involves an increase in the volume and wall thickness of the left ventricle. Such physical changes allow the heart to pump a greater volume of blood with each contraction, which is essential for meeting the body's aerobic demands.

257. (D) an enhanced stroke volume of the heart.
Trained individuals often exhibit bradycardia, or a lower resting heart rate, as a direct result of increased stroke volume. Because the heart becomes more efficient through training, it can pump significantly more blood per beat than an untrained heart. Consequently, the heart does not need to beat as frequently to maintain adequate circulation throughout the body at rest.

258. (A) Improved extraction of oxygen from the blood.
The vascular system adapts to chronic endurance exercise by increasing the density of capillaries within the muscle tissue. This structural change is highly beneficial because it provides a larger surface area for gas exchange. As a result, the muscles are able to extract oxygen more efficiently from the bloodstream, which is critical for sustaining prolonged, high-intensity aerobic activity.

259. (C) a significant increase in maximal oxygen uptake (VO_2 max).
The combination of various cardiovascular and respiratory adaptations, such as increased stroke volume and capillary density, culminates in a higher maximal oxygen uptake. Known as VO_2 max, this value is the standard measure of aerobic fitness. Improving this capacity allows athletes to perform at higher intensities for longer durations before the onset of fatigue becomes a limiting factor.

260. (A) Increased maximal ventilation capacity.
Although respiratory changes are often less pronounced than cardiovascular ones, long-term physical activity leads to an increased maximal ventilation capacity. This adaptation involves improved efficiency and strength of the respiratory muscles, allowing for a greater volume of air to be moved in and out of the lungs. Such efficiency supports the increased demand for oxygen during intense aerobic exercise.

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245. (B) (i), (ii), (iii), (v) only
Exercise physiology is a vital field that provides the scientific foundation for many aspects of physical activity. It helps us understand how the body responds to the stress of exercise and adapts to various environmental factors like heat and altitude. This knowledge is essential for designing effective athletic training programs and for prescribing exercise to promote health and prevent disease. Far from being limited, the principles of exercise physiology have direct and practical applications for athletes and the general population.

246. (C) To rapidly transmit the action potential from the sarcolemma to the interior of the muscle fiber.
Transverse tubules are specialized invaginations of the muscle fiber's cell membrane that play a critical role in muscle contraction. Their primary function is to rapidly transmit the electrical signal from the surface of the fiber deep into its interior. This ensures that the signal reaches the sarcoplasmic reticulum simultaneously throughout the cell, triggering a coordinated release of calcium ions. This rapid transmission is essential for the synchronous activation of contractile elements and the effective production of muscle force.

247. (B) A combination of motor unit recruitment and firing rate frequency.
The nervous system has the ability to precisely vary the amount of force a muscle produces to match the requirements of any task. This is accomplished through two primary mechanisms: motor unit recruitment and firing rate frequency. By increasing the number of active motor units and the frequency at which they receive electrical signals, the body can generate more force for heavy lifting. Conversely, for fine motor tasks, only a few small units are used, allowing for great control.

248. (B) The runner is relying heavily on anaerobic glycolysis, and excess CO_2 is being produced from the buffering of lactic acid.
When a runner performs a final kick at the end of a race, their Respiratory Exchange Ratio often rises above 1.0. This indicates that the body is relying heavily on anaerobic glycolysis to produce energy for this burst. The resulting accumulation of lactic acid is neutralized by buffering systems, producing additional carbon dioxide. Because more CO_2 is being exhaled than oxygen being consumed, the RER value exceeds its typical range, reflecting the intense anaerobic effort and the metabolic adjustment.

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249. (A) Prescribing weight-bearing exercise to counteract osteoporosis.
Applying knowledge of exercise physiology to promote healthy aging involves recommending activities that directly counteract typical declines. A prime example is prescribing weight-bearing exercise to help prevent or manage osteoporosis. By placing beneficial stress on the skeleton, these activities stimulate the body to maintain bone mineral density and strength. This evidence-based approach helps to reduce the risk of fractures and maintain physical independence, illustrating how scientific understanding of adaptations can significantly improve the life quality for older adults.

250. (A) Increased superficial circulation and the promotion of relaxation.
Effleurage is a foundational massage manipulation that produces several beneficial physiological responses in the body. The long, gliding strokes are primarily intended to increase superficial blood and lymphatic circulation which helps to warm tissues and facilitate metabolic waste removal. Furthermore, the gentle and rhythmic nature of this technique provides a soothing effect on the nervous system, helping to promote relaxation and reduce overall muscle tension. This makes effleurage an essential part of any massage session for recovery.

251. (B) To offer a scientific foundation for training methodologies.
Exercise physiology serves as the essential scientific foundation for establishing effective training methodologies within the realm of physical education and sports. This discipline moves practice away from trial-and-error approaches toward a more evidence-based profession. By understanding physiological responses, educators can create structured programs that target specific outcomes, such as improved cardiovascular health or increased muscular strength.

fiber takes place, central to skeletal muscle function.

238. (A) Directly interfering with Ca^{2+} release from the sarcoplasmic reticulum.
During high-intensity exercise, the rapid breakdown of ATP and phosphocreatine results in the accumulation of inorganic phosphate within the muscle cells. This buildup is a significant factor in the onset of muscle fatigue. Specifically, high levels of inorganic phosphate can impair performance by directly interfering with the release of calcium ions from the sarcoplasmic reticulum. By disrupting this essential step in the excitation-contraction coupling process, inorganic phosphate reduces the force the muscle can generate, leading to performance decline.

239. (B) Aerobic System
In an event like a 1500-meter race, which typically lasts several minutes, the body relies on a blend of energy systems. While the ATP-PC system and anaerobic glycolysis provide the initial power, the aerobic system becomes increasingly dominant as the race progresses. By the second minute, the cardiovascular and respiratory systems have adjusted to deliver more oxygen, allowing oxidative pathways to become the primary source of ATP. This transition is essential for maintaining a high and sustainable racing pace.

240. (B) Carbohydrates are consumed within the first hour after exercise.
The most effective way to rapidly restore muscle glycogen stores after a workout is to consume carbohydrates within the first hour of recovery. During this immediate post-exercise period, the body is highly efficient at processing glucose and converting it into stored glycogen due to increased insulin sensitivity. Delaying the intake of carbohydrates can significantly slow down this restoration process, which is particularly important for athletes who need to perform again soon. Timely nutrition is thus a key recovery factor.

241. (C) Muscle strength and power
In the study of aging and physical function, the term dynapenia refers specifically to the age-related loss of muscle strength and power that is not solely caused by a loss of muscle mass. While sarcopenia focuses on the reduction in muscle size, dynapenia highlights the decline in the quality and performance of the remaining muscle tissue and nervous system efficiency. Both conditions contribute to physical frailty in older adults, making resistance training important for healthful and functional aging.

242. (D) Therapeutic Ultrasound
Therapeutic ultrasound is a common modality used in rehabilitation to treat injuries to deep tissues like muscles, tendons, and ligaments. It works by using high-frequency sound waves that penetrate the skin and create vibrations within the tissues. These vibrations generate deep heat which can help to increase local circulation, reduce pain, and improve the extensibility of collagen fibers. By enhancing the local metabolic rate and promoting healing, ultrasound can be a valuable tool for recovering from various musculoskeletal conditions.

243. (A) Stimulates the bone marrow to produce more red blood cells.
Erythropoietin is a natural hormone that is also used in a synthetic form as a powerful ergogenic aid. Its primary physiological effect is to stimulate the bone marrow to produce a greater number of red blood cells. By increasing the red blood cell count, EPO significantly enhances the blood's capacity to transport oxygen to the working skeletal muscles. This provides a major advantage in endurance sports by allowing athletes to sustain higher levels of aerobic performance. However, its use is strictly banned.

244. (B) Concentric involves the muscle shortening, while eccentric involves the muscle lengthening under tension.
The primary difference between concentric and eccentric muscle actions lies in how the muscle changes length while generating force. A concentric contraction occurs when the muscle produces enough tension to overcome resistance and shortens in length, such as lifting a weight. In contrast, an eccentric contraction happens when the muscle generates tension while being lengthened by an external force, such as lowering a weight. Both types of action are essential for athletic movements and provide different stimuli for muscular growth.

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261. (D) The sarcomere.
Myofibrils are the components that make up a muscle fibre, and they are further divided into repeating functional units known as sarcomeres. Each sarcomere contains the necessary protein filaments that interact to produce movement. These units are organized in a sequential manner along the length of the myofibril, serving as the basic site where muscular contraction actually takes place.

262. (B) actin filaments slide past the myosin filaments.
According to the Sliding Filament Theory, muscle contraction is achieved when thin actin filaments slide past the thicker myosin filaments. Crucially, the filaments themselves do not actually shorten in length during this process. Instead, their overlapping movement reduces the overall length of the sarcomere. This sliding mechanism is what generates the force required for a muscle to contract effectively.

263. (C) To bind with troponin and expose actin's active sites.
Calcium ions play a critical role in initiating the contraction process when they are released following a nerve impulse. These ions bind to the protein troponin, which is located on the thin actin filaments. This binding triggers a change in the position of tropomyosin, exposing the active sites on the actin. This exposure allows myosin heads to attach and form cross-bridges.

264. (D) Myosin.
Within the microscopic structure of a sarcomere, the thick filaments are primarily composed of a protein known as myosin. These filaments are central to the contraction process as they possess specialized heads that interact with the thin actin filaments. The chemical energy from ATP hydrolysis powers these myosin heads, enabling them to pull the actin filaments during the muscular contraction cycle.

265. (A) myosin heads.
The movement known as the "power stroke" is executed by the myosin heads after they have successfully attached to the active binding sites on the actin filament. Using energy derived from ATP, these heads pivot to pull the thin actin filaments toward the center of the sarcomere. This mechanical action is what results in the shortening and contraction of the muscle.

266. (B) Type I fibres.
Elite marathon runners typically have a dominance of Type I muscle fibres, also known as slow-twitch fibres. These fibres are characterized by a high aerobic capacity and an abundance of mitochondria and myoglobin. Such attributes make them highly resistant to fatigue, which is essential for sustaining the low-to-moderate intensity required for several hours of continuous, long-distance running.

267. (B) generate high levels of force rapidly.
Type IIb or Type IIx muscle fibres are characterized by their ability to contract very quickly and generate extremely high levels of force. Because they rely heavily on anaerobic metabolism, these fibres are crucial for explosive and short-duration athletic events. While they are powerful, they also fatigue very rapidly, making them less suitable for activities that require long-term endurance.

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268. (A) high aerobic capacity and rich capillary supply.
The exceptional fatigue resistance observed in Type I muscle fibres is due to their high aerobic capacity and extensive capillary network. This rich blood supply ensures that the fibres receive a constant flow of oxygen and nutrients. Combined with a high concentration of mitochondria, these features allow the fibres to efficiently produce energy for prolonged periods without tiring quickly.

269. (C) Type IIa fibres, due to their intermediate properties.
An athlete competing in a 400-meter run relies heavily on Type IIa muscle fibres because of their unique intermediate properties. These fibres possess both aerobic and anaerobic metabolic capabilities, allowing them to generate high power while maintaining some level of endurance. This combination is essential for events that require sustained high-intensity output for durations lasting around one minute or more.

270. (D) It is primarily determined by genetics but can be adapted through training.
An individual's muscle fibre type composition is largely dictated by genetic factors established at

protein called troponin, which causes a second protein, tropomyosin, to shift its position. This movement uncovers the binding sites on the actin filament, allowing the myosin heads to attach. This precise interaction is the essential switch that initiates contraction.

224. (B) Type IIx (or IIb)
Type IIx muscle fibers are specialized for short-duration, high-intensity efforts. They are characterized by a large motor neuron size and high force production, but they also have very low resistance to fatigue. Because they rely almost entirely on anaerobic glycolytic pathways and have low levels of myoglobin and mitochondria, they appear white in color. These fibers are recruited for explosive power needed for tasks like maximal sprints or lifting heavy weights. Understanding these traits is essential for analyzing performance.

225. (B) It enhances the muscle's ability to store and transport oxygen from the cell membrane to the mitochondria.
An increase in myoglobin content is a vital muscular adaptation to long-term endurance training. Myoglobin is a specialized protein that binds oxygen within the muscle fiber, serving as a local reservoir and facilitating its transport from the cell membrane to the mitochondria. By enhancing the efficiency of oxygen delivery to the sites of aerobic metabolism, increased myoglobin levels help the muscle produce ATP more effectively and sustain a higher level of performance for a longer duration of physical activity.

226. (B) To increase the speed of nerve impulse transmission.
The myelin sheath is a protective, insulating layer that surrounds the axons of many neurons. Its primary physiological function is to significantly increase the speed at which nerve impulses, or action potentials, are transmitted. This is achieved through a process called saltatory conduction where the electrical signal jumps between gaps in the sheath known as nodes. By allowing signals to travel much faster, the myelin sheath ensures rapid and efficient communication throughout the nervous and muscular physiological systems.

227. (B) Lactate threshold
The lactate threshold is a critical physiological marker that represents the point during incremental exercise when the concentration of lactate in the blood begins to rise sharply above resting levels. This indicates that the rate of lactate production in the muscles has started to exceed the body's ability to clear it. For athletes, identifying this threshold is essential for determining aerobic fitness and prescribing training intensities. A higher threshold allows an athlete to sustain a faster pace without early fatigue.

228. (B) The recovery period (EPOC).
The restoration of phosphocreatine stores is an essential metabolic task that occurs during the recovery period following intense exercise. This process takes place during the initial, fast component of Excess Post-exercise Oxygen Consumption. Because the resynthesis of PCr requires energy from aerobic metabolism, it can only happen when an adequate supply of oxygen is available after the physical demand has ceased. Returning these energy stores to baseline is a key step in preparing muscles for subsequent bouts.

229. (A) P-3, Q-1, R-2, S-4
Different environmental conditions present unique physiological challenges that can impact health. High altitude primarily causes hypoxia due to reduced oxygen availability. Hot and humid environments impair the body's ability to regulate temperature through sweat evaporation, increasing the risk of hyperthermia. Cold environments pose risks of hypothermia and frostbite. High air pollution can cause respiratory irritation and impair efficient gas exchange in the lungs. Correctly identifying these challenges is essential for developing safe and effective athletic training strategies.

230. (B) Because there is a wide range of individual variability in performance within each gender.
Although average physiological differences exist between biological males and females, these statistics should not be used to exclude individuals from participating in any sport. There is a wide range of individual variability in performance and trainability within each gender, and many women possess physical capacities that far exceed those of the average man. Decisions

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requirements through oxidative phosphorylation. This system efficiently metabolizes fuel sources like fats and carbohydrates to maintain basic bodily functions without the need for high-speed, anaerobic energy production.

280. (D) heat production, whereas indirect calorimetry estimates energy from gas exchange.
Direct calorimetry measures the actual heat produced by the body to determine energy expenditure, as all metabolic processes eventually generate heat. In contrast, indirect calorimetry estimates energy use by measuring respiratory gas exchange, specifically oxygen consumption and carbon dioxide production. While both methods quantify the energy cost of exercise, they utilize different physiological parameters to reach their respective conclusions.

281. (A) The accumulation of metabolic by-products.
Fatigue is a multifaceted condition that involves several physiological changes, including the accumulation of metabolic by-products like hydrogen ions. These by-products can interfere with the muscle's ability to contract and generate force. Other contributing factors include the depletion of energy stores and neuro-muscular changes, all of which combine to reduce performance capacity during and after intense physical activity.

282. (B) Muscle glycogen.
The restoration of muscle glycogen is a relatively slow recovery process that can take between 24 and 48 hours to complete. This timeline is highly dependent on the amount of carbohydrates an athlete consumes after exercising. Unlike the rapid resynthesis of phosphocreatine, which takes only minutes, replenishing the body's primary carbohydrate stores requires significant time and proper nutritional support.

283. (B) elevated oxygen uptake that continues after exercise ends.
Excess post-exercise oxygen consumption, or EPOC, refers to the state where oxygen uptake remains higher than resting levels after physical activity has stopped. This elevated consumption is necessary for the body to return to its pre-exercise state. During this phase, the body works to restore internal balances and address the physiological "debt" incurred during the period of exertion.

284. (A) aid in the restoration of ATP and PCr stores.
One of the essential functions of recovery oxygen is to provide the energy needed to resynthesize ATP and phosphocreatine stores. This additional oxygen intake after exercise also supports other restorative tasks, such as metabolizing accumulated lactate and replenishing oxygen in myoglobin. These processes are vital for returning the body to homeostasis and preparing it for future physical performance.

285. (C) consuming adequate carbohydrates after exercise.
To accelerate the recovery process, it is critical for athletes to consume adequate amounts of carbohydrates following a workout. This nutritional strategy directly supports the replenishment of muscle glycogen, which is the body's primary fuel for intense activity. Since glycogen restoration is a slow process, timely carbohydrate intake ensures that energy stores are replaced as efficiently as possible for performance.

286. (D) An impaired ability to dissipate heat through evaporation.
Exercising in a hot and humid environment poses a significant challenge because high humidity interferes with the evaporation of sweat. Evaporation is the body's most effective mechanism for cooling itself during physical activity. When this process is impaired, heat cannot be dissipated efficiently, causing the core temperature to rise and increasing the risk of heat exhaustion or other illnesses.

287. (C) breathing rate and heart rate.
When an individual is first exposed to high altitude, the body immediately responds to the lower availability of oxygen. The respiratory system increases the breathing rate, and the cardiovascular system raises the heart rate to compensate for the hypoxic conditions. These acute responses aim to maintain the delivery of oxygen to the tissues despite the reduced atmospheric pressure at altitude.

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CHAPTER 03
Kinesiology and Biomechanics

1. Which of the following best defines Kinesiology?
(A) The study of forces and their effects on living systems.
(B) The scientific study of human or non-human body movement.
(C) The study of the structure of the human body.
(D) The study of how muscles produce force.

2. In the context of biomechanics, a 'modern trend' would most likely involve which of the following?
(A) Using computational modeling and wearable sensors for performance analysis.
(B) Utilizing digital anatomical charts and 3D diagrams for movement analysis.
(C) Relying on real-time subjective observation of athletes by qualified coaches.
(D) Focusing on traditional Newton's laws without the use of technological aids.

3. Which of the following statements about the anatomical planes is correct?
(A) The sagittal plane divides the body into anterior and posterior halves.
(B) The frontal plane divides the body into right and left halves.
(C) The transverse plane divides the body into superior and inferior halves.
(D) The coronal plane is another name for the sagittal plane.

4. Given below are two statements regarding anatomical planes and movement.
Statement I : The sagittal plane divides the body into right and left parts.
Statement II : A forward roll in gymnastics occurs primarily in the frontal plane.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

5. Flexion and extension movements primarily occur in which plane of the body?
(A) Frontal plane
(B) Transverse plane
(C) Sagittal plane
(D) Oblique plane

6. Which of the following is an example of movement in the frontal plane?
(A) Shaking your head 'no'
(B) Doing a jumping jack (abduction and adduction of limbs)
(C) Performing a biceps curl
(D) A bowler's arm rotation in cricket

7. Match the planes in List I with their primary axes of rotation in List II.
List I (Plane):
P. Sagittal Plane
Q. Frontal Plane
R. Transverse Plane
S. Oblique Plane
List II (Primary Axis of Rotation):
1. Anteroposterior Axis
2. Combination of axes
3. Mediolateral Axis
4. Longitudinal Axis
(A) P-3, Q-1, R-4, S-2
(B) P-1, Q-3, R-2, S-4
(C) P-4, Q-2, R-1, S-3
(D) P-3, Q-4, R-1, S-2

8. The point of muscle attachment to the bone that moves during contraction is called the:
(A) Insertion
(B) Origin
(C) Belly
(D) Ligament

9. Which of the following statements regarding muscle action is incorrect?
(A) The origin is the stable anchor of the muscle.
(B) The insertion is the point of attachment that moves upon contraction.

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advantage or to help the body bounce back more quickly from the physical stresses associated with high-intensity training and competitive sports.

297. (A) increase intramuscular phosphocreatine stores.
Creatine supplementation is a popular nutritional ergogenic aid that works by increasing the concentration of phosphocreatine within the muscles. This additional store allows for the rapid regeneration of ATP during short bursts of high-intensity activity. By enhancing the body's immediate energy availability, creatine helps athletes maintain power and performance during explosive movements like sprinting or heavy weight lifting sessions.

298. (B) kneading of the soft tissues.
Petrissage is a specific massage technique that involves the kneading and manipulation of soft tissues. This mechanical aid is used to stimulate local circulation and help relax tight muscles. By applying rhythmic pressure and squeezing movements, practitioners aim to reduce muscle tension and improve tissue elasticity, which are beneficial for both the recovery process and preparing for subsequent physical activity.

299. (B) aid in the removal of metabolic waste products.
One of the physiological benefits of massage is the stimulation of local blood flow to the treated areas. This increased circulation is thought to assist in the removal of metabolic waste products that accumulate during exercise. Additionally, improved blood flow enhances the delivery of oxygen and nutrients to the muscle tissues, which may help reduce soreness and speed up the recovery.

300. (A) promoting relaxation and reducing perceived fatigue.
Although some scientific claims regarding the physiological effects of massage are still debated, its role in psychological and physical relaxation is well-established. It is widely accepted that massage helps reduce the perception of fatigue and muscle soreness. By modulating neuro-muscular excitability and promoting a sense of well-being, massage remains a core component of most modern athlete recovery protocols and programs.

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2. Law of Inertia (Shot continues its path after release, affected by gravity)
3. Law of Inertia (Shot at rest in the hand)
4. Law of Action-Reaction (Athlete pushes on the ground)

Which chronological sequence of Newton's Laws best describes this entire action?
(A) 3, 4, 1, 2
(B) 1, 2, 3, 4
(C) 4, 3, 1, 2
(D) 3, 1, 4, 2

21. The path traced by a projectile in the absence of air resistance is a:
(A) Hyperbola
(B) Straight line
(C) Parabola
(D) Circle

22. For a projectile, which of the following components of velocity remains constant throughout the flight (ignoring air resistance)?
(A) Vertical velocity
(B) Horizontal velocity
(C) Overall velocity
(D) Angular velocity

23. Which of the following is NOT a principle of projection that affects the trajectory of an object like a javelin?
(A) Angle of projection
(B) Speed of projection
(C) Height of projection
(D) Mass of the athlete

24. To achieve the maximum possible horizontal distance (range) for a projectile launched from ground level, the optimal angle of projection is:
(A) 45 degrees
(B) 30 degrees
(C) 60 degrees
(D) 90 degrees

25. Consider the following statements about a long jumper's flight:
1. The center of mass follows a parabolic path.
2. The initial velocity at take-off is a key determinant of the distance.
3. Air resistance can be considered negligible for basic analysis.
4. The jumper can significantly alter their flight path mid-air to increase range.
5. The vertical velocity is zero at the peak of the trajectory.

Which of the above statements are correct?
(A) 1, 2 and 4 only
(B) 2, 3, 4 and 5
(C) 1, 2, 3 and 5
(D) All of the above

26. The study of the description of motion, including considerations of space and time, is called:
(A) Kinematics
(B) Kinetics
(C) Statics
(D) Dynamics

27. Which of the following is a vector quantity in kinematics?
(A) Speed
(B) Distance
(C) Mass
(D) Displacement

28. The rate of change of displacement is known as:
(A) Acceleration
(B) Velocity
(C) Speed
(D) Momentum

29. Angular kinematics deals with:
(A) Motion in a straight line.
(B) The forces causing motion.
(C) Rotational motion.
(D) The mass of a rotating body.

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30. Given below are two statements regarding linear kinetics.
Statement I : Linear kinetics is the study of the forces that cause linear motion.
Statement II : Torque is a concept central to linear kinetics.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

31. The angular equivalent of force is:
(A) Torque
(B) Momentum
(C) Inertia
(D) Power

(C) The origin and insertion points of a muscle are always on the same bone.
(D) A muscle's action describes the movement it produces.

10. Given below are two statements, one labeled as Assertion (A) and the other as Reason (R).
Assertion (A) : The biceps brachii muscle causes flexion at the elbow joint.
Reason (R) : The biceps brachii's origin is on the scapula, and its insertion is on the radius, crossing the elbow joint anteriorly.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

11. What is the primary action of the quadriceps femoris muscle group?
(A) Flexion of the knee
(B) Adduction of the hip
(C) Plantar flexion of the ankle
(D) Extension of the knee

12. Consider the following statements about human joints:
1. Synovial joints are freely movable.
2. The hip joint is an example of a ball-and-socket joint.
3. Hinge joints permit movement in only one plane.
4. The sutures of the skull are an example of cartilaginous joints.

Which of the above statements are correct?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 2, 3, and 4 only
(D) All of the above

13. All of the following are movements possible at a ball-and-socket joint EXCEPT:
(A) Flexion and Extension
(B) Abduction and Adduction
(C) Gliding
(D) Rotation

14. The term 'leverage' in the context of muscle action refers to the:
(A) The total force a muscle can generate.
(B) The speed at which a muscle can contract.
(C) The electrical stimulation required for muscle contraction.
(D) The mechanical advantage gained by a muscle-bone system.

15. Newton's First Law of Motion is also known as the Law of:
(A) Inertia
(B) Action-Reaction
(C) Acceleration
(D) Gravity

16. A sprinter remaining in the starting blocks until the gun fires is an example of which principle?
(A) Newton's Second Law (Acceleration)
(B) Newton's First Law (Inertia)
(C) Newton's Third Law (Action-Reaction)
(D) The principle of angular momentum

17. According to Newton's Second Law of Motion, acceleration is:
(A) Inversely proportional to force and directly proportional to mass.
(B) Directly proportional to force and inversely proportional to mass.
(C) Directly proportional to both force and mass.
(D) Inversely proportional to both force and mass.

18. A football player kicking a ball is a classic example of the application of which law of motion to produce acceleration?
(A) Law of Acceleration (F=ma)
(B) Law of Inertia
(C) Law of Action-Reaction
(D) Law of Conservation of Energy

19. A high jumper pushes down on the ground to propel themselves upwards. This is a direct application of:
(A) Newton's First Law
(B) The Magnus Effect
(C) Newton's Third Law
(D) The principle of projection

20. Read the following actions regarding the biomechanics of a shot put throw:
1. Law of Acceleration (Force applied to the shot)

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288. (B) an increase in red blood cell and hemoglobin production.
Acclimatization to high altitude is a long-term adaptation process where the body enhances its ability to transport oxygen. To compensate for the low-oxygen environment, the body increases the production of red blood cells and hemoglobin. This structural change improves the blood's overall oxygen-carrying capacity, eventually helping the athlete to perform better under the challenging conditions of high-altitude environments.

289. (D) a higher heart rate at a given workload.
Cardiovascular drift occurs when an athlete exercises in the heat, characterized by a progressive increase in heart rate even if the workload remains constant. This phenomenon is often caused by dehydration and the redirection of blood flow to the skin for cooling. Because the volume of blood returning to the heart decreases, the heart must beat faster to maintain output.

290. (A) implementing strategies for proper hydration.
An athlete preparing for competition in a hot climate must prioritize effective hydration strategies to maintain performance and health. Because the body loses significant fluids through increased sweating in the heat, failing to replace these fluids can lead to dehydration and impaired thermoregulation. Proper hydration helps stabilize the cardiovascular system and ensures that the body can continue dissipating heat effectively.

291. (C) similar relative improvements in strength and aerobic capacity as men.
Research into trainability indicates that women and men experience similar relative improvements when following comparable training programs. While absolute values for strength and aerobic capacity may differ due to size and body composition, the percentage of improvement in response to exercise is remarkably similar between genders. This demonstrates that both men and women possess a comparable physiological capacity for adaptation.

292. (A) Greater blood volume and hemoglobin concentration.
Men typically have a higher average maximal oxygen uptake (VO_2 max) due to several physiological factors. On average, men possess larger hearts, which increase stroke volume, as well as greater total blood volume and higher concentrations of hemoglobin. These elements combined allow for a superior ability to transport and utilize oxygen during high-intensity aerobic activities compared to the average woman.

293. (D) Disordered eating, amenorrhea, and osteoporosis.
The female athlete triad is a serious health syndrome characterized by three interlinked conditions: disordered eating, amenorrhea, and osteoporosis. Disordered eating often leads to a state of low energy availability, which can disrupt hormonal balance and cause the absence of menstruation. Over time, these hormonal changes result in decreased bone mineral density, significantly increasing the risk of fractures and long-term injury.

294. (B) greater absolute muscle mass.
In sports that require absolute strength and power, men generally have a physiological advantage due to their greater total muscle mass. Men typically possess a higher percentage of lean tissue and lower body fat than women, which translates into the ability to generate higher levels of absolute force. This difference is a key factor in the performance gap seen in power-based disciplines.

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295. (C) designing safe training and implementing injury prevention.
Understanding the unique physiological challenges and health risks faced by women athletes is essential for sports professionals. This knowledge allows coaches and doctors to design training regimens that are safe and effective while specifically addressing issues like the female athlete triad or ACL injuries. Proper monitoring and prevention strategies ensure the long-term health and peak performance of female competitors.

296. (D) To enhance athletic performance or recovery.
Ergogenic aids are defined as substances, techniques, or practices that are intended to improve an athlete's energy production, efficiency, or recovery. These aids can be nutritional, pharmacological, or mechanical in nature. Their primary role is to provide a performance

32. The resistance to angular acceleration is known as:
(A) Angular velocity
(B) Moment of inertia
(C) Angular momentum
(D) Centripetal force

33. Match the linear quantities in List I with their angular equivalents in List II.
List I (Linear Quantity):
P. Mass
Q. Force
R. Momentum
S. Velocity
List II (Angular Equivalent):
1. Torque
2. Angular Momentum
3. Moment of Inertia
4. Angular Velocity
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-1, R-2, S-4
(C) P-3, Q-2, R-1, S-4
(D) P-4, Q-1, R-2, S-3

34. A gymnast performing a somersault tucks their body in. What is the primary biomechanical reason for this action?
(A) To decrease their moment of inertia and speed up rotation.
(B) To increase their moment of inertia and slow down rotation.
(C) To increase their angular momentum.
(D) To decrease their angular momentum.

35. The force that opposes the relative motion between surfaces in contact is called:
(A) Gravity
(B) Tension
(C) Friction
(D) Drag

36. Which of the following factors does NOT directly influence the magnitude of sliding friction between two dry surfaces?
(A) The coefficient of friction.
(B) The normal force pressing the surfaces together.
(C) The nature of the surfaces in contact.
(D) The area of contact between the surfaces.

37. The curved flight path of a spinning ball, such as in tennis or football, is explained by the:
(A) Venturi effect
(B) Doppler effect
(C) Magnus effect
(D) Coriolis effect

38. Given below are two statements regarding the aerodynamics of a tennis ball.
Assertion (A) : Applying topspin to a tennis ball causes it to dip sharply as it crosses the net.
Reason (R) : Topspin creates a high-pressure zone on top of the ball and a low-pressure zone underneath, resulting in a downward force.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

39. The measure of the "bounciness" of a ball after a collision is quantified by the:
(A) Coefficient of friction
(B) Coefficient of drag
(C) Coefficient of lift
(D) Coefficient of restitution

40. An impact is considered perfectly elastic if the coefficient of restitution (e) is:
(A) $e = 1$
(B) $e = 0$
(C) $e > 1$
(D) $e < 0$

41. Which of the following best describes 'drag' in the context of air and water dynamics?
(A) A force that lifts an object, acting perpendicular to the fluid flow.
(B) The force of gravity acting on an object in a fluid.
(C) A resistive force that opposes the motion of an object through a fluid.
(D) The buoyant force that makes an object float.

42. A cyclist adopts a crouched position primarily to:
(A) Reduce form drag caused by air resistance.
(B) Increase their mass.
(C) Lower their center of gravity for stability.

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65. A coach observes that a young basketball player's shots are consistently falling short. From a biomechanics perspective, what is the most likely adjustment needed?
(A) Increasing the backspin on the ball.
(B) Increasing the height of the arc of the shot.
(C) Increasing the lateral movement before the shot.
(D) Decreasing the flexion in the knees.

66. Which axis of rotation is associated with movement in the frontal plane?
(A) Anteroposterior axis
(B) Longitudinal axis
(C) Mediolateral axis
(D) Vertical axis

67. The movement of turning the palm of the hand to face downwards or backwards is called:
(A) Supination
(B) Eversion
(C) Pronation
(D) Inversion

68. Consider the following statements about forces in sports:
1. Ground Reaction Force is an example of Newton's Third Law.
2. Centripetal force is required for an object to follow a curved path.
3. Drag is a type of fluid friction that opposes motion.
4. Buoyancy is the upward force exerted by a fluid.
5. Frictional force always acts in the same direction as motion.

Which of the above statements are correct?
(A) 1, 2, 3 and 4
(B) 2, 3, 4 and 5
(C) 1, 3 and 5 only
(D) All of the above

69. The 'action' of a muscle refers to:
(A) Its point of origin.
(B) Its point of insertion.
(C) The specific joint movement it produces on contraction.
(D) Its metabolic rate during activity.

70. Given below are two statements regarding lever systems.
Assertion (A) : In a third-class lever, the mechanical advantage is always less than 1.
Reason (R) : The effort arm is shorter than the resistance arm, prioritizing range of motion and speed over force multiplication.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

71. In kinesiological terms, moving the arm away from the body's midline in the frontal plane is known as:
(A) Adduction
(B) Flexion
(C) Extension
(D) Abduction

72. What is the angular equivalent of Newton's Second Law (F=ma)?
(A) $T = I\alpha$ (Torque = Moment of Inertia × Angular Acceleration)
(B) $P = mv$ (Momentum = Mass × Velocity)
(C) Fd = Work
(D) $L = I\omega$ (Angular Momentum = Moment of Inertia × Angular Velocity)

73. Horse riding and wearing corrective shoes are often recommended for which postural deformity?
(A) Scoliosis
(B) Kyphosis
(C) Knock-knees (Genu Valgum)
(D) Lordosis

74. A mechanical analysis of jumping focuses on:
(A) Maximizing vertical ground reaction force.
(B) Maximizing horizontal velocity at takeoff.
(C) Minimizing the flight time.
(D) The psychological preparation of the athlete.

75. Which joint in the human body is a classic example of a hinge joint?
(A) Hip joint
(B) Shoulder joint
(C) Radioulnar joint
(D) Elbow (humeroulnar) joint

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54. A swimmer experiences a lift force in the water due to their hand motion. This force is analogous to what aerodynamic principle?
(A) Magnus effect on a spinning ball.
(B) Lift on an airplane wing.
(C) Friction between a tire and road.
(D) Inertia of a stationary object.

55. Given below are two statements regarding postural deformities.
Statement I : Corrective exercises for Lordosis often focus on strengthening the abdominal and gluteal muscles.
Statement II : Lordosis is frequently associated with weak hip flexors and a weak lower back.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

56. Genu Valgum is the medical term for which postural deformity?
(A) Knock-knees
(B) Bow legs
(C) Flat foot
(D) Hunchback

57. Which pair of postural deformity and its description is incorrectly matched?
(A) Scoliosis - Lateral spinal curvature
(B) Kyphosis - Exaggerated thoracic curve
(C) Genu Varum - Knock-knees
(D) Lordosis - Inward lumbar curve

58. The loss of the medial longitudinal arch of the foot is a condition known as:
(A) Pes Planus (Flat Foot)
(B) Pes Cavus (High Arch)
(C) Genu Valgum
(D) Hallux Valgus

59. Walking with toes pointed inwards and picking up marbles with the toes are corrective exercises often prescribed for:
(A) Kyphosis
(B) Knock-knees
(C) Lordosis
(D) Flat foot

60. Which type of muscular analysis focuses on identifying the specific muscles responsible for producing a given movement?
(A) Mechanical analysis
(B) Kinesiological analysis
(C) Anatomical analysis
(D) Physiological analysis

61. A mechanical analysis of a tennis serve would be least concerned with which of the following?
(A) The sequence of joint rotations to maximize racket head speed.
(B) The calculation of torque at the shoulder joint.
(C) The metabolic energy system used by the player.
(D) The trajectory of the ball after impact.

62. In the mechanical analysis of running, the 'stance phase' refers to the period when:
(A) Both feet are off the ground.
(B) The body is airborne.
(C) The leg is swinging forward.
(D) One foot is in contact with the ground.

63. The primary muscle group responsible for hip extension during the propulsive phase of running is:
(A) Hamstrings and Gluteus Maximus
(B) Quadriceps
(C) Tibialis Anterior
(D) Abdominals

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64. Match the terms in List I with their descriptions in List II.
List I (Term):
P. Origin
Q. Insertion
R. Fulcrum
S. Effort
List II (Description):
1. The point where muscle force is applied
2. The pivot point of a lever
3. The more movable bony attachment of a muscle
4. The more stable bony attachment of a muscle
(A) P-4, Q-3, R-2, S-1
(B) P-3, Q-4, R-1, S-2
(C) P-4, Q-3, R-1, S-2
(D) P-1, Q-2, R-3, S-4

(D) Increase the friction between the tires and the road.

43. Which of the following is NOT a type of lever found in the human body?
(A) First Class Lever
(B) Second Class Lever
(C) Third Class Lever
(D) Fourth Class Lever

44. In a lever system, the mechanical advantage is calculated as:
(A) Resistance Arm / Force Arm
(B) Force Arm / Resistance Arm
(C) Force / Resistance
(D) Effort / Load Arm

45. Consider the following statements regarding levers in sports:
1. Third-class levers are the most common in the human body.
2. Third-class levers prioritize speed and range of motion over force.
3. A second-class lever has the resistance located between the fulcrum and the effort.
4. Nodding the head is an example of a first-class lever.

Which of the above statements are correct?
(A) 1 and 2 only
(B) 3 and 4 only
(C) 1, 2 and 3 only
(D) All of the above

46. Which of the following is an example of a second-class lever in the human body?
(A) The elbow joint during a biceps curl.
(B) The atlanto-occipital joint when nodding the head.
(C) A tennis forehand stroke.
(D) The action of standing on tiptoes (plantar flexion).

47. The biceps curl, where the effort (biceps insertion) is between the fulcrum (elbow joint) and the resistance (weight in hand), is a classic example of which type of lever?
(A) Third Class
(B) First Class
(C) Second Class
(D) It is not a lever system.

48. Good posture is best described as:
(A) A completely straight and rigid spine.
(B) An alignment of body parts with minimal stress and strain on supporting structures.
(C) A position that requires maximum muscular effort to maintain.
(D) The posture that looks most aesthetically pleasing.

49. An exaggerated outward curvature of the thoracic spine, often called 'hunchback', is known as:
(A) Lordosis
(B) Kyphosis
(C) Scoliosis
(D) Flat back

50. Arrange the following actions in the biomechanical analysis of a javelin throw into their correct chronological order.
1. Release
2. Follow-through
3. Approach run
4. Crossover steps and withdrawal

(A) 3, 4, 1, 2
(B) 4, 3, 1, 2
(C) 3, 1, 4, 2
(D) 1, 3, 4, 2

51. Lordosis is a postural deformity characterized by:
(A) A lateral curvature of the spine.
(B) A rounded upper back.
(C) An exaggerated inward curvature of the lumbar spine.
(D) A loss of the normal spinal curves.

52. A lateral, or sideways, curvature of the spine is known as:
(A) Kyphosis
(B) Lordosis
(C) Spondylosis
(D) Scoliosis

53. Which of the following would be an appropriate corrective exercise for Kyphosis?
(A) Performing abdominal crunches.
(B) Lying supine and pulling knees to the chest.
(C) Performing dumbbell rows and reverse flyes to strengthen upper back muscles.
(D) Stretching the hamstring muscles.

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76. The study of forces and their effects on objects is known as:
(A) Kinematics
(B) Mechanics
(C) Anatomy
(D) Physiology

77. The two main branches of mechanics relevant to biomechanics are:
(A) Anatomy and Physiology
(B) Kinematics and Kinetics
(C) Statics and Dynamics
(D) Linear and Angular

78. Which of the following is NOT a fundamental movement pattern analyzed in kinesiology?
(A) Walking
(B) Throwing
(C) Jumping
(D) Sleeping

79. A modern trend in biomechanics, 'motion capture technology', is primarily used to:
(A) Quantify the kinematics of human movement.
(B) Measure the force of muscle contraction directly.
(C) Analyze the nutritional intake of an athlete.
(D) Assess the psychological state of a performer.

80. A cartwheel is performed primarily in which plane?
(A) Sagittal
(B) Frontal (Coronal)
(C) Transverse
(D) Oblique

81. Consider the following statements about axes of rotation:
1. The longitudinal axis runs from head to toe.
2. The anteroposterior axis runs from front to back.
3. Rotation in the transverse plane occurs around the longitudinal axis.
4. Abduction and adduction occur around the mediolateral axis.

Which of the above statements are correct?
(A) 1 and 3 only
(B) 2 and 4 only
(C) 1, 2, and 3 only
(D) 1, 2, 3, and 4

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82. The movement of the ankle to point the foot and toes downward is called:
(A) Plantar flexion
(B) Dorsiflexion
(C) Inversion
(D) Eversion

83. Which of the following is a principal muscle used for hip flexion in sports like sprinting?
(A) Gluteus maximus
(B) Hamstrings
(C) Iliopsoas
(D) Gastrocnemius

84. The 'origin' of the deltoid muscle is on the clavicle and scapula, and its 'insertion' is on the humerus. Its 'action' is primarily:
(A) Adduction of the arm
(B) Flexion of the elbow
(C) Pronation of the forearm
(D) Abduction of the arm

85. Which of the following pairs is correctly matched?
(A) Law of Inertia - F=ma
(B) Law of Action-Reaction - An object in motion stays in motion
(C) Law of Inertia - An object at rest stays at rest
(D) Law of Acceleration - For every action, there is an equal and opposite reaction

86. Read the following case regarding a javelin throw and answer the question that follows.
A javelin thrower releases the implement at an angle of 35 degrees from a height of 2 meters above the ground. To increase the throw distance, which principle of projection is most critical to improve?
(A) The mass of the javelin
(B) The speed of release
(C) The height of release
(D) The spin on the javelin

87. Arrange the following joints in descending order of their typical range of motion.
1. Suture (Skull)
2. Ball-and-Socket (Hip)
3. Hinge (Elbow)
4. Pivot (Radioulnar)

(A) 1, 3, 4, 2
(B) 2, 4, 3, 1
(C) 2, 3, 4, 1

(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) All of the above

183. If an athlete increases the force they apply to a shot put by 20% while the mass remains constant, the acceleration will:
(A) Decrease by 20%
(B) Remain the same
(C) Increase by 40%
(D) Increase by 20%

184. The "Fosbury Flop" in high jumping is a technique that allows the athlete's center of mass to:
(A) Pass under the bar while the body clears it.
(B) Pass over the bar at a higher point than the body.
(C) Move much faster horizontally.
(D) Stop completely at the peak of the jump.

185. Given below are two statements regarding the lever action of the forearm.
Assertion (A) : The human forearm acts as a third-class lever during a biceps curl.
Reason (R) : This arrangement favors speed and range of motion at the hand at the expense of force, meaning the bicep must generate a force much larger than the weight being lifted.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

186. Which of the following is a measure of linear kinetics?
(A) Force
(B) Displacement
(C) Velocity
(D) Acceleration

187. The measure of an object's resistance to a change in its state of angular motion is:
(A) Torque
(B) Angular momentum
(C) Centripetal force
(D) Moment of inertia

188. Chakrasana (Wheel Pose) is a beneficial corrective exercise for:
(A) Flat Feet
(B) Kyphosis
(C) Knock-knees
(D) Bow legs

189. Which is the most appropriate description of a 'kinesiological analysis'?
(A) The numerical measurement of forces and torques.
(B) A video-based qualitative assessment of performance.
(C) The description of movement in terms of joints, muscles, and planes/axes.
(D) The study of an athlete's psychological state.

190. In the mechanical analysis of a golf swing, the concept of a 'double pendulum' refers to the:
(A) The backswing and the downswing.
(B) The movement of the hips and shoulders.
(C) The path of the clubhead and the ball.
(D) Swing of the arms and the uncocking of the wrists.

191. Elevation and depression are movements associated with which body part?
(A) Scapula (Shoulder girdle)
(B) Ankle
(C) Forearm
(D) Spine

192. Which of the following statements about center of gravity is correct?
(A) For a person standing in the anatomical position, the center of gravity is located in the chest.
(B) In a successful high jump, the athlete's center of gravity may pass under the bar.
(C) An object is most stable when its center of gravity is high and its base of support is narrow.
(D) The center of gravity and center of mass are entirely different concepts.

193. The "kick" phase in swimming is mechanically analyzed for its role in:
(A) Breathing only.
(B) Propulsion and body stabilization.
(C) Reducing the swimmer's mass.
(D) Creating surface drag.

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100. Consider the following statements about biomechanics:
1. It is a sub-discipline of kinesiology.
2. It applies mechanical principles to biological systems.
3. It can be qualitative or quantitative.
4. Qualitative analysis involves numerical measurement.

Which of the above statements are correct?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) All of the above

101. Decreasing the angle of a joint is known as:
(A) Extension
(B) Abduction
(C) Flexion
(D) Adduction

102. What is the primary muscle responsible for plantar flexion at the ankle, crucial for jumping and running?
(A) Tibialis anterior
(B) Gastrocnemius and Soleus
(C) Quadriceps femoris
(D) Hamstrings

103. If a force of 100 N is applied to a 10 kg object, what will its acceleration be (ignoring friction)?
(A) 1000 m/s^2
(B) 1 m/s^2
(C) 0.1 m/s^2
(D) 10 m/s^2

104. A discus thrower rotates rapidly before release. This rotation is primarily to:
(A) Increase the linear velocity of the discus upon release.
(B) Increase the height of release.
(C) Decrease the effect of air resistance.
(D) Ensure the discus lands within the sector.

105. Given below are two statements regarding displacement.
Statement I : Linear displacement refers to the change in position of an object in a straight line.
Statement II : Angular displacement refers to the change in the angular position of a rotating body.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

106. The product of an object's mass and its velocity is:
(A) Momentum
(B) Force
(C) Impulse
(D) Work

107. Which of the following describes the effect of backspin on a golf ball?
(A) It creates a downward force (Magnus effect), causing the ball to dip.
(B) It has no effect on the ball's trajectory.
(C) It causes the ball to curve sideways.
(D) It creates an upward force (Magnus effect), increasing flight time and distance.

108. Which is an example of a first-class lever in a non-human context?
(A) A wheelbarrow
(B) A seesaw
(C) A fishing rod
(D) A pair of tweezers

109. Which of the following is NOT a postural deformity?
(A) Scoliosis
(B) Lordosis
(C) Arthritis
(D) Kyphosis

110. A mechanical analysis of a high jump clearance would most likely focus on:
(A) The athlete's heart rate during the jump.
(B) The color of the athlete's uniform.
(C) The muscle fiber type of the athlete.
(D) The relationship between the athlete's center of mass and the bar.

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111. The transverse plane is associated with which axis of rotation?
(A) Longitudinal axis
(B) Mediolateral axis
(C) Anteroposterior axis
(D) Horizontal axis

112. The movement of the thumb to touch the fingertips is a special movement called:

135. In a mechanical analysis of a cricket fast bowler's action, 'front-on' and 'side-on' techniques primarily differ in the:
(A) Speed of the run-up.
(B) Height of the bowler.
(C) Grip on the cricket ball.
(D) Alignment of the shoulders and hips relative to the target.

136. The joint between the first cervical vertebra (Atlas) and the second (Axis) allows for what primary movement?
(A) Rotation (Shaking head 'no')
(B) Flexion/Extension (Nodding 'yes')
(C) Lateral Flexion
(D) Abduction

137. Which of the following best defines biomechanics?
(A) The study of joint structures and their classification.
(B) The analysis of muscle fiber types and their recruitment.
(C) The application of mechanical principles to the study of living organisms.
(D) The study of human movement in a sporting context only.

138. A body will continue in its state of rest or uniform motion unless acted upon by an external force. This is a statement of:
(A) Newton's First Law
(B) Newton's Second Law
(C) The Principle of Conservation of Energy
(D) The Principle of Angular Momentum

139. Consider the following statements about projectile motion:
1. Two balls, one dropped and one projected horizontally from the same height, will hit the ground simultaneously (ignoring air resistance).
2. The vertical component of a projectile's velocity is maximum at the peak of its flight.
3. The horizontal range is determined solely by the horizontal component of velocity.
4. The acceleration of a projectile is always directed downwards at 9.8 m/s^2.

Which of the above statements are correct?
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 3, and 4 only
(D) 2 and 4 only

140. Which of the following is a scalar quantity?
(A) Velocity
(B) Speed
(C) Force
(D) Acceleration

141. The property of a material to return to its original shape after being deformed is called:
(A) Plasticity
(B) Viscosity
(C) Elasticity
(D) Friction

142. A wheelchair is an example of which class of lever?
(A) First Class
(B) Third Class
(C) It depends on how it is used.
(D) Second Class

143. Which of the following is a corrective exercise for Lordosis?
(A) Performing pelvic tilts to flatten the lower back.
(B) Lying prone and lifting the upper body (back extension).
(C) Stretching the hamstrings.
(D) Performing calf raises.

144. In the context of sports skills, 'sequencing' in a mechanical analysis refers to:
(A) The order in which different energy systems are used.
(B) The chronological order of movements of different body parts.
(C) The choice of equipment for a given sport.
(D) The warm-up routine before a performance.

145. Rotation of the forearm so that the palm faces upward or forward is called:
(A) Pronation
(B) Supination
(C) Protraction
(D) Retraction

146. The study of movement without regard to the forces causing it is:
(A) Kinematics

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124. The law of motion that provides the basis for the conservation of momentum is:
(A) Newton's First Law
(B) Newton's Third Law
(C) Newton's Second Law
(D) The Law of Universal Gravitation

125. A shot putter releases the shot at the same speed from the same height. To achieve maximum range, the release angle should be:
(A) Exactly 45 degrees.
(B) Slightly more than 45 degrees.
(C) Slightly less than 45 degrees.
(D) 90 degrees.

126. Match the movements in List I with their examples in List II.
List I (Movement):
P. Rotation
Q. Circumduction
R. Adduction
S. Dorsiflexion
List II (Example):
1. Bringing your arm back to your side from a raised position.
2. Drawing a circle in the air with your arm.
3. Pulling your toes up towards your shin.
4. Shaking your head 'no'.
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-1, S-3
(D) P-2, Q-4, R-1, S-3

127. Torque is calculated as:
(A) Force × Perpendicular distance from the axis
(B) Force × Mass
(C) Force × Time
(D) Mass × Velocity

128. What happens to the moment of inertia of a diver when they change from a tucked position to a straight layout position?
(A) It decreases.
(B) It increases.
(C) It remains the same.
(D) It becomes zero.

129. The buoyant force acting on a submerged object is equal to the:
(A) Weight of the object.
(B) Weight of the fluid displaced by the object.
(C) Volume of the object.
(D) Mass of the fluid displaced by the object.

130. The primary advantage of a third-class lever in the human body is:
(A) Speed and range of motion
(B) Force multiplication
(C) Stability
(D) Energy conservation

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131. Which of the following is a key component of a kinesiological analysis of a squat?
(A) Calculating the ground reaction force.
(B) Measuring the velocity of the barbell.
(C) Identifying the agonist and antagonist muscles at the hip and knee.
(D) Determining the center of mass of the lifter-barbell system.

132. The 'insertion' of the quadriceps femoris muscle group is at the:
(A) Ischial tuberosity
(B) Greater trochanter of the femur
(C) Head of the fibula
(D) Tibial tuberosity via the patellar tendon

133. Which of the following statements about motion is incorrect?
(A) General motion is a combination of linear and angular motion.
(B) Rectilinear motion occurs in a straight line.
(C) Angular motion is also known as translation.
(D) Curvilinear motion occurs along a curved path.

134. Arrange the following events in the historical development of biomechanics in chronological order.
1. Use of high-speed cameras and force plates.
2. Aristotle's description of animal movement.
3. Newton's formulation of the Laws of Motion.
4. Widespread use of computational modeling and AI.
(A) 2, 3, 1, 4
(B) 3, 2, 1, 4
(C) 1, 2, 3, 4
(D) 2, 1, 3, 4

(D) 4, 2, 3, 1

88. The study of the forces that cause motion is called:
(A) Kinetics
(B) Kinematics
(C) Arthrology
(D) Osteology

89. Which statement is incorrect regarding angular motion?
(A) It involves rotation around an axis.
(B) It is measured in degrees or radians.
(C) All parts of the body move the same distance.
(D) Angular velocity is the rate of change of angular position.

90. An ice skater pulls their arms in while spinning. This action conserves:
(A) Angular momentum
(B) Linear momentum
(C) Potential energy
(D) Kinetic energy

91. Match the postural deformities in List I with their common names in List II.
List I (Postural Deformity):
P. Kyphosis
Q. Lordosis
R. Genu Valgum
S. Pes Planus
List II (Common Name):
1. Knock-Knees
2. Flat Foot
3. Hunchback
4. Swayback
(A) P-3, Q-4, R-1, S-2
(B) P-4, Q-3, R-2, S-1
(C) P-3, Q-1, R-4, S-2
(D) P-1, Q-2, R-3, S-4

92. The coefficient of friction is a ratio of:
(A) Normal force to the force of friction.
(B) Force of friction to the normal force.
(C) Applied force to the force of friction.
(D) Gravitational force to the normal force.

93. A perfectly inelastic collision is one where:
(A) Kinetic energy is conserved.
(B) The coefficient of restitution is 1.
(C) The objects stick together after impact.
(D) Momentum is not conserved.

94. The streamlining of a cyclist's helmet is designed to reduce which type of force?
(A) Surface Drag
(B) Wave Drag
(C) Lift Force
(D) Form Drag

95. What class of lever is represented by the action of the triceps muscle at the elbow joint when performing an extension? (Fulcrum: elbow; Effort: triceps insertion; Resistance: weight in hand)
(A) First Class
(B) Second Class
(C) Third Class
(D) It is not a lever.

96. Which is the most appropriate corrective measure for Genu Varum (Bow Legs)?
(A) Strengthening the inner thigh muscles (adductors).
(B) Bracing and, in severe cases, surgery.
(C) Performing abdominal crunches.
(D) Stretching the calf muscles.

97. Kinesiological analysis of walking involves studying the:
(A) Take-off and landing phases.
(B) Swing phase and stance phase.
(C) Approach run and release phase.
(D) Preparation and follow-through phase.

98. In the mechanical analysis of throwing, the principle of 'summation of forces' refers to:
(A) The sequential activation of body segments to generate maximum velocity.
(B) The total force of gravity acting on the object.
(C) The reaction force from the ground.
(D) The final force applied by the hand alone.

99. The "axis" that passes horizontally from front to back through the body is the:
(A) Longitudinal axis
(B) Mediolateral (Frontal) axis
(C) Anteroposterior (Sagittal) axis
(D) Vertical axis

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(B) Kinetics
(C) Statics
(D) Dynamics

147. Given below are two statements regarding the rotational speed of a figure skater.
Assertion (A) : A figure skater spins faster when she pulls her arms and legs in.
Reason (R) : This action increases her angular momentum, causing a higher rotational velocity.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

148. Which of the following is not a synovial joint?
(A) Hinge joint
(B) Ball-and-socket joint
(C) Pivot joint
(D) Suture joint of the skull

149. The deltoid muscle is a prime mover for which action at the shoulder joint?
(A) Adduction
(B) Internal Rotation
(C) Abduction
(D) Extension

150. A soccer player kicks a ball with a force of 500 N. The ball has a mass of 0.5 kg. What is the initial acceleration of the ball?
(A) 250 m/s^2
(B) 1000 m/s^2
(C) 500 m/s^2
(D) 2500 m/s^2

151. Which principle states that the angle of incidence is equal to the angle of reflection?
(A) Principle of spin
(B) Principle of elasticity
(C) Principle of projection
(D) Principle of impact

152. Consider the following statements about friction:
1. Static friction is the friction between two surfaces that are not moving relative to each other.
2. Kinetic friction is the friction between two surfaces that are moving relative to each other.
3. Rolling friction is generally much lower than sliding friction.
4. Applying lubricants increases the coefficient of friction.
5. Friction always opposes motion or attempted motion.

Which of the above statements are correct?
(A) 1, 2, 3 and 4
(B) 1, 2, 3 and 5
(C) 2, 3, 4 and 5
(D) All of the above

153. A swimmer's streamlined body position in the water is primarily designed to minimize:
(A) Buoyant force
(B) Gravitational force
(C) Drag force
(D) Lift force

154. A wheelbarrow, where the load (resistance) is between the wheel (fulcrum) and the handles (effort), is an example of what class of lever?
(A) Second Class
(B) First Class
(C) Third Class
(D) A compound lever

155. Given below are two statements regarding posture.
Statement I : Good posture contributes to efficient body function and helps prevent injury.
Statement II : Maintaining ideal posture requires no muscular effort.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

156. In a mechanical analysis of a basketball jump shot, the "release point" is a critical factor in:
(A) The player's balance on landing.
(B) The initial trajectory of the ball.
(C) The speed of the player's run-up.
(D) The amount of force absorbed by the knees.

157. Circular motion of a limb, combining flexion, extension, abduction, and adduction, is called:
(A) Rotation
(B) Supination

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(C) Circumduction
(D) Opposition

158. The primary action of the hamstring muscle group is:
(A) Knee extension
(B) Hip flexion
(C) Ankle plantar flexion
(D) Knee flexion and hip extension

159. The momentum of an object will change only if:
(A) A net external force acts on it over time.
(B) Its mass changes.
(C) Its direction of motion changes.
(D) It collides with another object.

160. Which of the following defines Statics?
(A) The study of systems undergoing acceleration.
(B) The study of systems in a constant state of motion.
(C) The study of living organisms and their movements.
(D) The study of fluids in motion.

161. A modern trend in biomechanics involves using 'force plates' to measure:
(A) The air resistance on an athlete.
(B) The ground reaction forces.
(C) The muscle activity (EMG).
(D) The joint angles during movement.

162. Match the axes in List I with their primary movements in List II.
List I (Axis):
P. Anteroposterior Axis
Q. Mediolateral Axis
R. Longitudinal Axis
S. Oblique Axis
List II (Primary Movement):
1. Flexion / Extension
2. Somersault
3. Abduction / Adduction
4. Pirouette / Twisting
(A) P-1, Q-3, R-4, S-2
(B) P-3, Q-1, R-2, S-4
(C) P-3, Q-1, R-4, S-2
(D) P-4, Q-2, R-1, S-3

163. The immovable joints of the skull are structurally classified as:
(A) Synovial
(B) Cartilaginous
(C) Fibrous
(D) Amphiarthrosis

164. The latissimus dorsi is a large muscle of the back whose primary action is:
(A) Scapular elevation and upward rotation.
(B) Shoulder abduction and lateral rotation.
(C) Spine extension and lateral flexion.
(D) Shoulder adduction, extension, and internal rotation.

165. When a diver goes from a layout to a tuck position, their angular velocity increases. This is an example of:
(A) Conservation of linear momentum
(B) The Magnus Effect
(C) Conservation of angular momentum
(D) Newton's Third Law

166. A ski jumper leans forward in flight to:
(A) Increase their weight.
(B) Create an aerodynamic lift force.
(C) Decrease their speed.
(D) Comply with competition rules.

167. Which of the following is NOT an application of levers in sports?
(A) A bat hitting a ball.
(B) The arm action in swimming.
(C) A rower's oar in the water.
(D) The conservation of momentum in a collision.

168. Halasana (Plough Pose) in yoga can be a corrective exercise for which postural condition?
(A) Kyphosis
(B) Genu Varum
(C) Pes Planus
(D) Knock-Knees

169. What is the most important factor in a kinesiological analysis of walking for a person with a prosthetic limb?
(A) The cost of the prosthesis.
(B) The aesthetic appearance of the gait.
(C) The symmetry and efficiency of the gait pattern.
(D) The brand of the prosthetic limb.

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170. Which of the following is a key phase in the mechanical analysis of a throwing skill like the shot put?
(A) The delivery/release phase
(B) The resting phase
(C) The hydration phase
(D) The post-competition phase

171. Movement towards the midline of the body in the frontal plane is:
(A) Abduction
(B) Flexion
(C) Extension
(D) Adduction

172. The triceps brachii is the prime mover for which action?
(A) Elbow flexion
(B) Elbow extension
(C) Shoulder flexion
(D) Forearm supination

173. Arrange the following components of a lever in the correct order for a Second-Class lever.
1. Effort (Force)
2. Fulcrum (Axis)
3. Resistance (Load)
(A) 2 - 3 - 1
(B) 1 - 2 - 3
(C) 2 - 1 - 3
(D) 1 - 3 - 2

174. A projectile's trajectory is influenced by all of the following EXCEPT:
(A) Initial velocity
(B) Projection angle
(C) Projection height
(D) The object's color

175. Which statement correctly describes the relationship between linear and angular velocity for a point on a rotating object?
(A) Linear velocity = angular velocity × radius.
(B) Linear velocity is independent of the distance from the axis of rotation.
(C) Linear velocity = angular velocity / radius.
(D) There is no relationship between them.

176. Which of these is an example of a Third Class Lever in sports?
(A) A seesaw
(B) A rowing boat
(C) A wheelbarrow
(D) Nodding the head

177. A postural deviation characterized by the knees bowing outward is:
(A) Genu Valgum
(B) Genu Varum
(C) Kyphosis
(D) Pes Planus

178. A key focus of the mechanical analysis of running is to:
(A) Optimize stride length and stride frequency.
(B) Maximize vertical oscillation of the center of mass.
(C) Maximize ground contact time.
(D) Ensure the runner is sufficiently hydrated.

179. A joint that allows movement in one plane only (like the knee) is a:
(A) Ball-and-socket joint
(B) Pivot joint
(C) Hinge joint
(D) Saddle joint

180. The application of biomechanical principles to improve technique and prevent injury is a core objective of:
(A) Sports psychology
(B) Sports medicine
(C) Sports sociology
(D) Sports coaching

181. What is the axis for movements occurring in the sagittal plane?
(A) Longitudinal
(B) Anteroposterior
(C) Mediolateral
(D) Vertical

182. Consider the following statements about muscle attachments:
1. The origin is generally the more proximal attachment.
2. The insertion is generally the more distal attachment.
3. During contraction, the insertion moves towards the origin.
4. Ligaments attach muscle to bone.
Which of the above statements are correct?

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(A) Reposition
(B) Opposition
(C) Eversion
(D) Protraction

113. Which of the following is NOT a part of the hamstring muscle group?
(A) Biceps femoris
(B) Rectus femoris
(C) Semitendinosus
(D) Semimembranosus

114. Given below are two statements regarding the mechanics of friction.
Assertion (A) : It is harder to start pushing a heavy box than to keep it sliding.
Reason (R) : The coefficient of static friction is generally greater than the coefficient of kinetic (sliding) friction.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

115. A projectile's time of flight is determined by:
(A) Its horizontal velocity and the range.
(B) Its mass and the angle of projection.
(C) Its initial vertical velocity and the height of projection.
(D) Its horizontal acceleration.

116. Which of the following is a unit of angular velocity?
(A) Meters per second (m/s)
(B) Newtons (N)
(C) Kilograms (kg)
(D) Radians per second (rad/s)

117. The turning effect of a force is called:
(A) Inertia
(B) Momentum
(C) Torque
(D) Power

118. Which statement about the center of gravity (CG) is incorrect?
(A) It is the point where the entire weight of the body can be considered to act.
(B) The CG of the human body is a fixed point that never changes.
(C) A lower CG generally increases stability.
(D) The CG can be located outside the physical body.

119. Hanging from a bar (e.g., in gymnastics) is a corrective exercise primarily for:
(A) Flat foot
(B) Knock-knees
(C) Bow legs
(D) Spinal deformities like Scoliosis

120. In the analysis of catching a ball, the principle of 'increasing the time of impact' is used to:
(A) Decrease the force of impact.
(B) Increase the force of impact.
(C) Ensure the ball is caught securely.
(D) Increase the momentum of the ball.

121. Consider the following statements regarding levers:
1. A first-class lever can have a mechanical advantage greater than, less than, or equal to 1.
2. A second-class lever always has a mechanical advantage greater than 1.
3. A third-class lever always has a mechanical advantage less than 1.
4. The human body uses levers to produce movement.
5. In a second-class lever, the effort is between the fulcrum and resistance.

Which of the above statements are correct?
(A) 1, 2, 3 and 4
(B) 2, 3, 4 and 5
(C) 1, 3 and 5 only
(D) All of the above

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122. Which of the following represents linear motion?
(A) A skier gliding straight down a slope.
(B) A gymnast performing a somersault.
(C) A skater spinning on one spot.
(D) The arm of a bowler in cricket.

123. Which of the following movements does not occur at the wrist joint?
(A) Flexion
(B) Extension
(C) Abduction (Radial Deviation)
(D) Rotation

194. Which of the following is NOT one of Newton's Laws of Motion?
(A) The Law of Conservation of Energy
(B) The Law of Inertia
(C) The Law of Acceleration
(D) The Law of Action-Reaction

195. Match the concepts in List I with their relevant applications in List II.
List I (Concept):
P. Magnus Effect
Q. Moment of Inertia
R. Coefficient of Restitution
S. Ground Reaction Force
List II (Relevant Application):
1. A gymnast tucking to spin faster
2. The "bounciness" of a new basketball
3. A sprinter pushing off the starting blocks
4. A "curveball" in baseball
(A) P-4, Q-1, R-2, S-3
(B) P-1, Q-4, R-3, S-2
(C) P-4, Q-2, R-1, S-3
(D) P-3, Q-1, R-2, S-4

196. The study of bodies, masses, and forces in a state of motion is called:
(A) Statics
(B) Anatomy
(C) Physiology
(D) Dynamics

197. Protraction and retraction are movements most associated with the:
(A) Ankle
(B) Knee
(C) Jaw and shoulder girdle
(D) Hip

198. The gluteus maximus is a primary mover for which joint action?
(A) Hip flexion
(B) Hip extension
(C) Knee extension
(D) Ankle dorsiflexion

199. A force that causes or tends to cause rotation is:
(A) Linear force
(B) Centripetal force
(C) Frictional force
(D) Torque

200. Consider the following statements about postural deformities:
1. Scoliosis is a 'C' or 'S' shaped curve in the spine.
2. Kyphosis is often caused by poor posture, such as slouching.
3. Lordosis can be aggravated by weak abdominal muscles and excess belly weight.
4. Genu Valgum refers to bow-legs.
Which of the above statements are correct?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) All of the above

201. Which fundamental movement is a prerequisite for more complex skills like jumping and landing?
(A) Throwing
(B) Catching
(C) Squatting
(D) Running

202. The sagittal plane divides the body into:
(A) Right and left sections
(B) Top and bottom sections
(C) Front and back sections
(D) Inner and outer sections

203. A saddle joint is found in which part of the body?
(A) The elbow
(B) The knee
(C) The hip
(D) The thumb (carpometacarpal joint)

204. The pectoralis major muscle is a prime mover for which action(s)?
(A) Shoulder abduction and external rotation
(B) Shoulder flexion, adduction, and internal rotation
(C) Elbow flexion and supination
(D) Spine flexion

205. According to the principles of projection, if a javelin and a shot put are thrown with the same initial velocity and at the same angle, which will travel farther (ignoring air resistance)?
(A) The javelin
(B) The shot put
(C) They will travel the same distance.

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physics to human performance to gain a greater understanding of athletic achievement and to prevent injury. Modern trends in biomechanics have revolutionized how athletes are trained and how movements are analyzed. These trends include the integration of high-speed digital video cameras to capture nuanced motion, force plates to measure ground reaction forces during activities like jumping and running, and electromyography (EMG) to assess the electrical activity of muscles. Furthermore, sophisticated computational modeling and computer simulations allow for the prediction of movement outcomes and stress on biological tissues without physical testing. This quantitative approach enables coaches and sports scientists to dissect complex sports skills, identify inefficiencies, and prescribe targeted interventions. The ultimate goal of applying these biomechanical principles is twofold: to optimize the mechanical aspects of a sports technique for enhanced performance and to reduce the loading on anatomical structures, thereby minimizing the risk of acute or chronic injury.

Based on the above source, attempt the following five questions.

251. According to the passage, what is the primary function of biomechanics within the field of kinesiology?
(A) To study the psychological dynamics of movement.
(B) To apply mechanical and physical laws to understand human performance.
(C) To focus exclusively on the physiological mechanisms of the human body.
(D) To develop computational models for non-human movement.

252. A sports scientist uses a force plate to analyze a long jumper's take-off. This action is an example of which concept mentioned in the passage?
(A) A modern trend in biomechanics for measuring ground reaction forces.
(B) The exclusive use of computational modeling for prediction.
(C) A psychological dynamic principle of movement.
(D) The application of electromyography to assess muscle origin.

253. Based on the passage, what can be inferred as a key distinction between kinesiology and biomechanics?
(A) To study the psychological dynamics of movement.
(B) To focus exclusively on the physiological mechanisms of the human body.
(C) Kinesiology has a broader scope, while biomechanics is a specialized application of mechanical principles within it.
(D) To develop computational models for non-human movement.

254. Which of the following is NOT listed in the passage as a tool associated with modern trends in biomechanics?
(A) High-speed digital video cameras.
(B) Electromyography (EMG).
(C) Force plates.
(D) Global Positioning Systems (GPS).

255. What are the dual objectives of applying biomechanical principles as described in the source?
(A) Increasing muscle activity and simulating stress on tissues.
(B) Capturing nuanced motion and predicting movement outcomes.
(C) Enhancing performance by optimizing technique and minimizing injury risk.
(D) Analyzing athletic achievement and studying physiological principles.

Direction : Please read the following source carefully.

The analysis of human movement is fundamentally structured around a system of anatomical planes and axes. These are imaginary constructs used to describe the location of structures and the direction of movements. The three principal planes are the sagittal, frontal (or coronal), and transverse (or horizontal) planes. The sagittal plane divides the body vertically into left and right parts; movements occurring in this plane, such as flexion and extension, happen around a frontal axis, which runs from side to side. The frontal plane divides the body vertically into anterior (front) and posterior (back) parts; movements in this plane, like abduction and adduction, occur around a sagittal axis, which runs from front to back. Finally, the transverse plane divides

(D) Arm

218. The gait cycle in walking consists of:
(A) The stance phase and the swing phase.
(B) The swing phase and the running phase.
(C) The take-off phase and the landing phase.
(D) The acceleration phase and the deceleration phase.

219. The study of motion is divided into:
(A) Anatomy and physiology
(B) Strength and conditioning
(C) Internal and external mechanics
(D) Kinematics and kinetics

220. Consider the following statements about a golf swing:
1. It is primarily a rotational movement occurring in the transverse plane.
2. The principle of summation of forces is used to generate club head speed.
3. A longer club generally allows for a greater potential club head speed.
4. The grip pressure is a major biomechanical factor.
5. The swing is an example of linear motion.

Which of the above statements are correct?
(A) 1, 2, 3 and 4
(B) 2, 3, 4 and 5
(C) 1, 3 and 5 only
(D) All of the above

221. An upward-facing C-shaped curve in the lumbar region is:
(A) Kyphosis
(B) Scoliosis
(C) Lordosis
(D) Spondylitis

222. The term "dynamics" in biomechanics refers to:
(A) The study of objects at rest.
(B) The study of anatomical structures.
(C) The qualitative description of movement.
(D) The study of objects undergoing acceleration.

223. The primary axis for a somersault is the:
(A) Mediolateral axis
(B) Longitudinal axis
(C) Anteroposterior axis
(D) Vertical axis

224. Eversion and inversion are movements that occur at the:
(A) Knee joint
(B) Subtalar joint of the foot/ankle
(C) Elbow joint
(D) Shoulder joint

225. Newton's Third Law is most clearly demonstrated in which sporting action?
(A) A diver holding a pike position in the air.
(B) A rower's oar pushing against the water to move the boat.
(C) A golf ball flying through the air after being struck.
(D) A cyclist coasting downhill without pedaling.

226. Which of the following is a unit of torque?
(A) Newton-meter (Nm)
(B) Newton (N)
(C) Joule (J)
(D) Watt (W)

227. The coefficient of restitution would be most relevant for analyzing:
(A) The spin of a figure skater.
(B) The flight of a javelin.
(C) The impact of a tennis ball on a racket.
(D) The friction between a ski and snow.

228. Arrange the following movements of a vertical jump in chronological order.
1. Flight phase
2. Landing phase
3. Takeoff (propulsion)
4. Preparatory (countermovement) phase

(A) 4, 3, 1, 2
(B) 3, 4, 1, 2
(C) 4, 1, 3, 2
(D) 1, 2, 3, 4

229. Which of the following is NOT a primary goal of a mechanical analysis of a major sports skill?
(A) To maximize performance efficiency.
(B) To minimize the risk of injury.
(C) To determine the athlete's dietary needs.
(D) To provide a basis for technique correction.

230. Which of these movements decreases the angle between the foot and the shin?
(A) Plantar flexion

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(B) Dorsiflexion
(C) Eversion
(D) Inversion

231. The "origin" of the gastrocnemius muscle is on the:
(A) Tibia
(B) Fibula
(C) Calcaneus (heel bone)
(D) Femur

232. If a gymnast is rotating with a certain angular velocity and they extend their arms, their moment of inertia will _____ and their angular velocity will _____.
(A) increase; decrease
(B) decrease; increase
(C) increase; increase
(D) decrease; decrease

233. The force resisting motion through water is significantly greater than through air primarily due to water's higher:
(A) Temperature
(B) Transparency
(C) Density
(D) Elasticity

234. In a first-class lever, the fulcrum is located:
(A) Between the effort and the resistance.
(B) At one end, with the effort at the other.
(C) Between the fulcrum and the resistance.
(D) At the same point as the effort.

235. Bhujangasana (Cobra Pose) is a corrective exercise that primarily targets which postural issue?
(A) Flat foot
(B) Knock-knees
(C) Lordosis
(D) Kyphosis

236. The phase of a skill from the end of the execution phase until the body has regained balance is the:
(A) Preparatory phase
(B) Follow-through phase
(C) Execution phase
(D) Stance phase

237. Which statement about the frontal plane is incorrect?
(A) It is also known as the coronal plane.
(B) Jumping jacks are a movement in this plane.
(C) It divides the body into anterior and posterior portions.
(D) The axis of rotation for this plane is the anteroposterior axis.

238. Given below are two statements regarding the leg muscles.
Statement I : The soleus muscle lies deep to the gastrocnemius.
Statement II : Both the soleus and gastrocnemius are powerful plantar flexors of the ankle.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

239. Given below are two statements regarding gravitational acceleration.
Assertion (A) : In the absence of air resistance, a heavy cannonball and a light marble dropped from the same height will land at the same time.
Reason (R) : The acceleration due to gravity (g) is constant for all objects near the Earth's surface, regardless of their mass.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

240. Angular acceleration is defined as the rate of change of:
(A) Angular displacement
(B) Angular velocity
(C) Moment of inertia
(D) Torque

241. What is the primary purpose of applying chalk (magnesium carbonate) to a gymnast's hands?
(A) To reduce the weight of the hands.
(B) To increase the coefficient of friction.
(C) To decrease the coefficient of friction.
(D) To improve the aesthetics of the performance.

242. Match the lever classes in List I with their human body examples in List II.

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List I (Lever Class):
P. First Class
Q. Second Class
R. Third Class
S. Not a lever
List II (Human Body Example):
1. Biceps curl (Elbow flexion)
2. Conservation of momentum
3. Nodding the head (Atlanto-occipital joint)
4. Standing on tiptoes (Plantar flexion)
(A) P-1, Q-4, R-3, S-2
(B) P-3, Q-4, R-1, S-2
(C) P-3, Q-1, R-4, S-2
(D) P-4, Q-3, R-1, S-2

243. The analysis of the forces involved in running, such as ground reaction force and friction, falls under the category of:
(A) Linear Kinematics
(B) Angular Kinematics
(C) Linear Kinetics
(D) Angular Kinetics

244. A key difference between walking and running from a mechanical perspective is that running has:
(A) A longer ground contact time.
(B) No period of double support.
(C) A lower center of gravity.
(D) A flight phase where neither foot is on the ground.

245. Modern trends in biomechanics often integrate data from multiple sources, such as motion capture, force plates, and electromyography (EMG). What does EMG measure?
(A) Force
(B) Velocity
(C) Electrical activity of muscles
(D) Joint angle

246. Which joint allows for the greatest range of motion in the human body?
(A) Knee joint (Hinge)
(B) Shoulder joint (Ball-and-socket)
(C) Elbow joint (Hinge)
(D) Hip joint (Ball-and-socket)

247. The muscular analysis of a push-up would identify the pectoralis major and triceps brachii as:
(A) Antagonists
(B) Fixators
(C) Synergists
(D) Agonists

248. A football is kicked at an angle of 60 degrees. To achieve the same range with a different angle, which angle should be chosen (ignoring air resistance)?
(A) 30 degrees
(B) 20 degrees
(C) 45 degrees
(D) 90 degrees

249. Which of the following statements about levers is incorrect?
(A) Levers are used to multiply force or speed.
(B) All levers have a fulcrum, effort, and resistance.
(C) A third-class lever always provides a mechanical advantage greater than 1.
(D) A second-class lever always provides a mechanical advantage greater than 1.

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250. Consider the following statements about analyzing fundamental movements:
1. Kinesiological analysis identifies the active muscles.
2. Mechanical analysis quantifies forces, velocities, and accelerations.
3. The purpose of such analysis is often performance enhancement and injury prevention.
4. Analyzing a jump involves studying both linear and angular motion.
5. All fundamental movements occur in a single plane of motion.

Which of the above statements are correct?
(A) 1, 2, 3 and 4
(B) 2, 3, 4 and 5
(C) 1, 3 and 5 only
(D) All of the above

Direction : Please read the following source carefully.

Kinesiology, the scientific study of human or non-human body movement, encompasses a wide array of physiological, biomechanical, and psychological dynamic principles and mechanisms. As a core component within this field, biomechanics applies the laws of mechanics and

(D) It depends on the weather conditions.

206. Given below are two statements regarding angular momentum.
Statement I : Angular momentum is a product of moment of inertia and angular velocity.
Statement II : The principle of conservation of angular momentum states that angular momentum remains constant if no external torque acts on the system.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

207. A collision where the objects bounce off each other and kinetic energy is conserved is known as a(n):
(A) Perfectly elastic collision
(B) Perfectly inelastic collision
(C) Partially elastic collision
(D) Neutral collision

208. The oar of a boat acts as which class of lever?
(A) First Class (depending on the water as the fulcrum)
(B) It can be First or Second class depending on the reference.
(C) Second Class (depending on the oarlock as the fulcrum)
(D) Third Class (depending on the handle as the resistance)

209. Corrective exercises for flat feet (Pes Planus) often aim to:
(A) Weaken the arch of the foot further.
(B) Strengthen the intrinsic muscles of the foot to support the arch.
(C) Increase the flexibility of the ankle joint.
(D) Stretch the Achilles tendon.

210. A mechanical analysis of a long jump would show that the most critical factor for determining the distance is the:
(A) Velocity (speed and direction) at takeoff.
(B) Duration of the flight phase.
(C) Angle of the legs during landing.
(D) Arm swing during the flight.

211. Which of the following is NOT a type of joint movement?
(A) Flexion
(B) Adduction
(C) Contraction
(D) Rotation

212. The mechanical advantage of a lever is greater than 1 in which class(es) of lever?
(A) First class only
(B) Third class only
(C) First and Second class levers
(D) Second class only

213. A runner's spiked shoes are designed to:
(A) Decrease friction to run faster.
(B) Reduce the runner's weight.
(C) Increase friction to provide better grip.
(D) Improve air dynamics.

214. The 'follow-through' phase in skills like throwing or kicking is biomechanically important for:
(A) Increasing the velocity of the object.
(B) Safely decelerating the limbs and preventing injury.
(C) Posing for the camera.
(D) Conserving energy for the next attempt.

215. Given below are two statements regarding streamlining in sports.
Assertion (A) : In sports like swimming and cycling, athletes adopt streamlined positions.
Reason (R) : Streamlining reduces form drag, which is a major resistive force at high velocities in fluid environments.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

216. The vertical jump test is a measure of:
(A) Muscular power
(B) Linear speed
(C) Flexibility
(D) Agility

217. In the context of levers, which of the following refers to the pivot point?
(A) Effort
(B) Resistance
(C) Fulcrum

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the body horizontally into superior (upper) and inferior (lower) parts; rotational movements, such as twisting the torso or rotating the head, take place around a vertical or longitudinal axis, which runs top to bottom. While it is convenient for analysis to isolate movements to a single plane and axis, it is crucial to recognize that the majority of complex sports skills, like throwing a discus or performing a tennis serve, are multi-planar and involve simultaneous motion across multiple planes and around multiple axes.

Based on the above source, attempt the following five questions.

256. According to the passage, movement in the sagittal plane occurs around which axis?
(A) The vertical axis.
(B) The frontal axis.
(C) The sagittal axis.
(D) The longitudinal axis.

257. A figure skater performing a spin is primarily moving in which plane and around which axis?
(A) In the sagittal plane around a frontal axis.
(B) In the frontal plane around a sagittal axis.
(C) In the sagittal plane around a vertical axis.
(D) In the transverse plane around a vertical axis.

258. The passage suggests that analyzing movements in a single plane is:
(A) An analytical convenience that simplifies a more complex reality.
(B) The most accurate way to understand complex sports skills.
(C) The only method to describe rotational movements.
(D) A technique used exclusively for flexion and extension.

259. Which pair of movements is correctly associated with the frontal plane?
(A) Flexion and extension.
(B) Rotation and circumduction.
(C) Abduction and adduction.
(D) Protraction and retraction.

260. What fundamental concept does the source establish about the nature of most athletic movements?
(A) They are complex and involve motion in multiple planes simultaneously.
(B) They are primarily rotational and occur in the transverse plane.
(C) They are strictly divided between anterior and posterior body parts.
(D) They are simple and can be fully described by a single axis.

Direction : Please read the following source carefully.

The architecture of human movement is built upon the interplay between the skeletal and muscular systems, specifically concerning joints and muscle attachments. Joints act as the fulcrums or pivot points for motion, with their structure determining the range and type of movement possible. The movements they permit include flexion, which decreases the angle between two bones, and extension, which increases it. Other fundamental movements include abduction (moving a limb away from the body's midline) and adduction (moving it toward the midline). For these movements to occur, muscles must exert force across the joints. This is achieved through specific muscle attachments. The origin of a muscle is typically its more stable, proximal attachment point, while the insertion is the more mobile, distal attachment point. When a muscle contracts, it pulls the insertion towards the origin, producing a specific action or movement. This entire system functions based on the principle of leverage, where bones act as levers, joints as fulcrums, and muscular forces provide the effort to move a resistance. The action and leverage of the principal muscles used in sports, such as the quadriceps in kicking or the deltoids in throwing, are critical determinants of an athlete's power and efficiency.

Based on the above source, attempt the following five questions.

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261. According to the passage, what is the functional role of a muscle's insertion?
(A) It serves as the stable, proximal attachment point.
(B) It is the part of the muscle that does not move during contraction.
(C) It functions as the fulcrum or pivot point for the movement.
(D) It is the mobile attachment point that is pulled toward the origin during contraction.

carefully.

The mechanical analysis of movement is divided into two main branches: kinematics and kinetics. Kinematics is the branch of mechanics concerned with the description of motion, without considering the forces that cause it. It answers questions like "how far?", "how fast?", and "how consistently?". Key kinematic variables include displacement (the change in position), velocity (the rate of change of displacement), and acceleration (the rate of change of velocity). These can be either linear, describing motion along a line (translation), or angular, describing motion around an axis (rotation). For instance, analyzing a sprinter's 100-meter dash time involves linear kinematics, while analyzing the rotation of a gymnast's body during a somersault involves angular kinematics. In contrast, kinetics is the study of the relationship between motion and its causes, namely forces and torques. It seeks to understand why a particular motion occurred. Key kinetic variables include force, mass, momentum (mass in motion), and torque (a rotational force). An analysis of the ground reaction forces on a runner's foot using a force plate is a kinetic analysis, as is calculating the torque produced by the shoulder muscles during a baseball pitch. Both kinematics and kinetics are essential for a complete biomechanical understanding of a sports skill.

Based on the above source, attempt the following five questions.

276. Which of the following questions would be answered through a kinematic analysis?
(A) What was the rotational velocity of the figure skater's spin?
(B) Why did the baseball curve?
(C) How much force did the weightlifter apply to the barbell?
(D) What torque was generated at the knee joint during the kick?

277. A biomechanist studies the forces generated by a swimmer's hands to propel them through the water. This type of study falls under which branch of mechanics?
(A) Linear Kinematics.
(B) Angular Kinematics.
(C) Displacement Analysis.
(D) Kinetics.

278. What is the fundamental distinction between kinematics and kinetics as described in the passage?
(A) Kinematics deals with rotation, while kinetics deals with linear motion.
(B) Kinematics describes motion, while kinetics explains the causes of motion.
(C) Kinematics involves variables like force and mass, while kinetics involves velocity and acceleration.
(D) Kinematics is a quantitative analysis, while kinetics is a qualitative description.

279. According to the text, which of the following is an example of an angular kinematic variable?
(A) The speed of a sprinter running in a straight line.
(B) The force applied by a boxer's fist.
(C) The rotation of a gymnast's body.
(D) The mass of a shot put.

280. The passage suggests that a complete biomechanical analysis of a tennis serve would require:
(A) Only a kinetic analysis of the forces involved.
(B) Only a kinematic description of the racket's speed and path.
(C) Neither kinematics nor kinetics, but a different branch of mechanics.
(D) Both a kinematic description of the movement and a kinetic analysis of the forces causing it.

Direction : Please read the following source carefully.

Several specific physical phenomena, including friction, spin, impact, and elasticity, play a crucial role in the outcome of most sporting activities. Friction is the force that resists the relative motion between surfaces in contact. It is essential for generating traction, as seen in the grip between an athlete's shoes and the playing surface, but it can also be a resistive force that athletes seek to minimize, such as in skiing or swimming. Spin, or the rotation of an object in flight, can dramatically alter a projectile's trajectory through the Magnus effect, where the spin creates a pressure differential in the surrounding air, causing the object to curve. This is fundamental to a curveball in baseball or applying topspin in tennis. Impact refers to a high-force collision occurring over a very short period.

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their arms in.
(D) A diver pushing off the board to gain height.

269. The passage implies that to change the direction of a moving soccer ball, a player must:
(A) Increase its mass.
(B) Rely on its existing inertia.
(C) Apply an external force to it.
(D) Wait for the action-reaction principle to take effect.

270. A coach advises a shot putter to apply as much force as possible during the throw. This advice is a practical application derived from which of Newton's laws?
(A) The first law, concerning overcoming inertia.
(B) The third law, concerning action and reaction forces.
(C) All three laws equally and simultaneously.
(D) The second law, concerning the relationship between force and acceleration.

Direction : Please read the following source carefully.

In biomechanics, a projectile is any object that is thrown, kicked, or struck into the air and is then subject only to the forces of gravity and air resistance. The flight path, or trajectory, of such a projectile is governed by three primary principles of projection. The first is the speed of projection, which refers to the magnitude of the velocity at the moment of release. This is often the most critical factor in determining the horizontal distance the projectile will travel. The second principle is the angle of projection, which is the angle relative to the horizontal at which the object is released. In the absence of air resistance and when the landing height is the same as the release height, the optimal angle for maximum distance is 45 degrees. However, in many sports like the shot put or javelin, the release height is above the landing height, which means the optimal angle is typically less than 45 degrees. The third principle is the height of projection, which is the vertical distance between the point of release and the landing surface. A greater height of projection can increase the projectile's flight time, which, in turn, can contribute to achieving a greater horizontal distance. These principles are strategically manipulated by athletes in events like the long jump, high jump, and basketball to achieve their desired outcome.

Based on the above source, attempt the following five questions.

271. According to the passage, which factor is often considered the most critical in determining the horizontal distance of a projectile?
(A) The angle of projection.
(B) The height of projection.
(C) The speed of projection.
(D) The force of air resistance.

272. A shot putter releases the shot from shoulder height, and it lands on the ground. Based on the principles described, what is the likely optimal angle of projection for this athlete to achieve maximum distance?
(A) Exactly 45 degrees.
(B) Less than 45 degrees.
(C) Greater than 45 degrees.
(D) Exactly 90 degrees.

273. Which of the following is the best definition of a projectile as described in the source?
(A) An object that is only subject to the force of air resistance.
(B) Any object that is thrown with maximum speed.
(C) An object whose trajectory is determined solely by its release angle.
(D) An object in flight that is subject to gravity and air resistance.

274. The passage implies that increasing the height of projection is beneficial primarily because it:
(A) Increases the projectile's total flight time.
(B) Decreases the effect of air resistance.
(C) Allows for a 45-degree release angle.
(D) Increases the speed of the projectile.

275. A basketball player shooting a free throw is applying the principles of projection. Which combination of factors must they control to be successful?
(A) Only the speed and force of the shot.
(B) Only the angle and height of the ball's trajectory.
(C) The speed, angle, and height of projection.
(D) The mass of the ball and the force of gravity.

Direction : Please read the following source

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262. An athlete performing a lateral raise, lifting their arm out to the side, is demonstrating which type of movement described in the text?
(A) Flexion.
(B) Abduction.
(C) Extension.
(D) Adduction.

263. The passage uses an analogy to explain the mechanics of movement. In this analogy, what anatomical structure corresponds to the fulcrum?
(A) The muscle.
(B) The bone.
(C) The joint.
(D) The origin point.

264. What is the primary distinction between the origin and insertion of a muscle as defined in the source?
(A) The origin is distal, while the insertion is proximal.
(B) The origin is the point of mobile attachment, while the insertion is stable.
(C) The origin produces flexion, while the insertion produces extension.
(D) The origin is generally the more stable attachment, while the insertion is more mobile.

265. Based on the passage, the efficiency of a kicking motion in sports is critically dependent on:
(A) The action and leverage of principal muscles like the quadriceps.
(B) The range of motion of the hip joint exclusively.
(C) The muscle's ability to pull the origin towards the insertion.
(D) The decrease in the angle between two bones, known as adduction.

Direction : Please read the following source carefully.

The application of Sir Isaac Newton's laws of motion is fundamental to the mechanical analysis of all sports. The first law, the Law of Inertia, states that an object will remain at rest or in uniform motion in a straight line unless acted upon by an external force. In sports, this means a significant force is required to start, stop, or change the direction of an object or an athlete. For example, a sprinter must generate a powerful force to overcome their static inertia at the start of a race. The second law, the Law of Acceleration, establishes a direct relationship between force, mass, and acceleration (F=ma). It dictates that the acceleration of an object is directly proportional to the net force applied to it and inversely proportional to its mass. This explains why a greater force is needed to throw a heavier object like a shot put the same distance as a lighter one, or why applying more force to a tennis ball results in greater velocity. The third law, the Law of Action-Reaction, posits that for every action, there is an equal and opposite reaction. This principle is ubiquitous in sports: a swimmer propels themselves forward by pushing water backward, and a high jumper pushes down on the ground to generate an upward reaction force that lifts them over the bar.

Based on the above source, attempt the following five questions.

266. A basketball player pushes off the floor to jump for a rebound. Which of Newton's laws most directly explains the upward movement of the player in response to pushing down on the ground?
(A) The Law of Inertia.
(B) The Law of Action-Reaction.
(C) The Law of Acceleration.
(D) The Law of Universal Gravitation.

267. According to the Law of Acceleration (F=ma), if two athletes with different masses apply the exact same net force to a starting block, what will be the result?
(A) The athlete with the greater mass will experience greater acceleration.
(B) The athlete with the lesser mass will experience greater acceleration.
(C) Both athletes will experience the same acceleration.
(D) Neither athlete will experience any acceleration.

268. Which of the following sporting scenarios is the best illustration of the Law of Inertia?
(A) A stationary golf ball that only moves when struck by a club.
(B) A curveball changing direction mid-flight.
(C) A figure skater spinning faster by pulling

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The outcome of an impact is influenced by the momentum of the colliding objects and the time over which the force is absorbed; sports equipment like helmets and pads are designed to increase the impact time to reduce the peak force. Elasticity is the property of an object to resist deformation and return to its original shape. The coefficient of restitution (COR) is a measure of this property, dictating how "lively" the bounce is between two objects, such as a golf ball and a clubface, or a basketball and the court.

Based on the above source, attempt the following five questions.

281. A tennis player hits a ball with heavy topspin, causing it to dip sharply after clearing the net. Which phenomenon described in the passage is primarily responsible for this?
(A) The Magnus effect resulting from spin.
(B) The coefficient of restitution.
(C) The high impact force of the racket.
(D) The static friction between the ball and the air.

282. Why are protective pads in sports like American football and hockey designed to be compressible?
(A) To increase the coefficient of restitution and produce a livelier bounce.
(B) To increase the impact time and thereby reduce the peak force felt by the athlete.
(C) To decrease the impact time and maximize the force of the collision.
(D) To reduce the effect of spin on the player's body during a collision.

283. According to the passage, friction in sports can be described as:
(A) A force that is always detrimental to performance.
(B) A force that can be either beneficial for traction or detrimental as resistance.
(C) A phenomenon that only affects spinning projectiles.
(D) The property of an object to return to its original shape.

284. The "liveliness" of a bounce between a ball and a surface is a practical manifestation of which concept?
(A) Elasticity and the coefficient of restitution.
(B) Spin and the Magnus effect.
(C) Friction and traction.
(D) Impact duration.

285. Which of the following pairs correctly matches a sports scenario with the primary physical phenomenon involved, as described in the text?
(A) A skier waxing their skis — Minimizing elasticity.
(B) A long jumper wearing spiked shoes — Reducing impact force.
(C) A baseball pitcher throwing a curveball — Utilizing spin.
(D) A golf ball bouncing on a green — Maximizing friction.

Direction : Please read the following source carefully.

The performance of athletes in many sports is significantly influenced by the principles of air and water dynamics, a field of fluid mechanics. When an athlete moves through a fluid like air or water, they experience a resistive force known as drag. Drag is comprised of two main components: surface drag, which results from the friction between the fluid and the surface of the object, and form drag, which is determined by the shape and cross-sectional area of the object facing the flow. To enhance performance, athletes in sports like cycling, speed skating, and swimming adopt streamlined or crouched positions to minimize their cross-sectional area, thereby reducing form drag, which is often the most significant resistive force. In addition to drag, athletes can also experience a lift force, which is a force that acts perpendicular to the direction of fluid flow. This force, which can be directed upwards, downwards, or sideways, is generated by the shape and orientation of an object relative to the flow. For example, the airfoil shape of a discus generates an upward lift force that helps it stay airborne longer. Similarly, the spin on a ball can create lift via the Magnus effect. The strategic practice of "drafting" in cycling and running, where one athlete follows closely behind another, is a direct application of these principles, as the trailing athlete benefits from the reduced drag in the leader's wake.

Based on the above source, attempt the following five questions.

286. According to the passage, why do cyclists adopt a crouched position during a race?

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(A) To increase the effect of surface drag.
(B) To generate a greater upward lift force.
(C) To take advantage of the Magnus effect.
(D) To minimize form drag by reducing their cross-sectional area.

287. The upward force that helps a discus stay in the air longer is an example of which concept?
(A) Surface drag.
(B) Form drag.
(C) Lift force.
(D) Drafting.

288. What is the primary difference between drag and lift forces as described in the text?
(A) Drag is a resistive force, while lift is always an assistive force.
(B) Drag acts parallel to the fluid flow, while lift acts perpendicular to it.
(C) Drag is only present in water, while lift is only present in air.
(D) Drag is caused by shape, while lift is caused by friction.

289. The practice of drafting in cycling is a strategy used to achieve what objective?
(A) To increase the trailing cyclist's exposure to lift forces.
(B) To maximize the surface drag on the leading cyclist.
(C) To create a Magnus effect for the entire group of cyclists.
(D) To reduce the resistive effects of drag by following another rider.

290. Based on the passage, which component of drag is most significantly affected by an athlete's posture and shape?
(A) Form drag.
(B) Surface drag.
(C) Magnus drag.
(D) Frictional drag.

Direction : Please read the following source carefully.

The human body utilizes a system of levers to produce movement, with bones serving as the levers, joints as the fulcrums (pivot points), and muscles providing the effort to move a resistance or load. These levers are categorized into three classes based on the relative positions of the fulcrum (F), effort (E), and resistance (R). A first-class lever has the fulcrum positioned between the effort and the resistance (E-F-R), an arrangement seen in the extension of the neck to look upwards. This class can provide a mechanical advantage, a disadvantage, or neither, depending on the distances of the effort and resistance from the fulcrum. A second-class lever has the resistance located between the fulcrum and the effort (F-R-E). An example is a calf raise, where the ball of the foot is the fulcrum, the body's weight is the resistance, and the calf muscle provides the effort. This class of lever always provides a mechanical advantage, meaning the effort required is less than the resistance, making it efficient for moving heavy loads. The most common type in the human body is the third-class lever, where the effort is applied between the fulcrum and the resistance (F-E-R). A bicep curl is a classic example. While these levers always operate at a mechanical disadvantage (requiring more effort than the resistance), they confer a significant advantage in terms of speed and range of motion at the distal end of the lever.
Based on the above source, attempt the following five questions.

291. Which class of lever is described as being the most common in the human body and providing an advantage in speed and range of motion?
(A) First-class lever.
(B) Second-class lever.
(C) Third-class lever.
(D) A combination of first and second-class levers.

292. An athlete performs a calf raise, lifting their body weight on the balls of their feet. According to the passage, this movement utilizes which class of lever?
(A) Second-class lever.
(B) First-class lever.
(C) Third-class lever.
(D) A lever with no mechanical advantage.

293. What is the key characteristic of a second-class lever as described in the source?
(A) The fulcrum is between the effort and resistance.
(B) It always operates at a mechanical disadvantage.
(C) The effort is applied between the fulcrum

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and resistance.
(D) It always provides a mechanical advantage in terms of force.

294. In the lever system of the human body, what anatomical structures serve as the lever and fulcrum, respectively?
(A) Muscle and Bone.
(B) Bone and Joint.
(C) Joint and Muscle.
(D) Ligament and Tendon.

295. The passage states that third-class levers operate at a mechanical disadvantage. What does this imply?
(A) The muscle force required is less than the load being moved.
(B) The movement produced is very slow and has a limited range.
(C) The muscle force required is greater than the load being moved.
(D) The lever is equally efficient for force and speed.

Direction : Please read the following source carefully.

Posture refers to the alignment and positioning of the body in relation to gravity, support, and muscular activity. Good posture involves the balanced alignment of body parts, which places minimal stress and strain on supporting structures. Conversely, poor posture can lead to a variety of deformities, such as Kyphosis (an exaggerated outward curvature of the thoracic spine, or "hunchback"), Lordosis (an excessive inward curvature of the lumbar spine, or "swayback"), and Scoliosis (a lateral, or sideways, curvature of the spine). These conditions can result from muscle imbalances, habitual poor positioning, or congenital factors. To address these issues, a program of corrective exercises is often prescribed. The goal of such exercises is to restore musculoskeletal balance by strengthening muscles that have become weak and elongated, and by stretching muscles that are tight and shortened. Beyond static posture, a comprehensive analysis of movement is crucial for performance and injury prevention. This involves both a kinesiological analysis, which identifies the specific joints, movements, and muscles activated during a skill, and a mechanical analysis, which examines the forces, leverage, and projectile principles at play. This dual analysis of fundamental movements and major sports skills allows coaches and therapists to improve technique, boost efficiency, and mitigate the risk of injury.

Based on the above source, attempt the following five questions.

296. According to the passage, what is the primary goal of corrective exercises for postural deformities?
(A) To increase the lateral curvature of the spine for better flexibility.
(B) To exclusively strengthen all major muscle groups equally.
(C) To diagnose congenital factors that cause poor posture.
(D) To restore musculoskeletal balance by stretching tight muscles and strengthening weak ones.

297. An individual with an excessive inward curve of the lower back is described as having which postural deformity?
(A) Lordosis.
(B) Kyphosis.
(C) Scoliosis.
(D) Varus deformity.

298. What is the key difference between a kinesiological analysis and a mechanical analysis as described in the source?
(A) Kinesiological analysis is for static posture, while mechanical analysis is for dynamic movement.
(B) Kinesiological analysis focuses on muscles and joints, while mechanical analysis focuses on forces and leverage.
(C) Kinesiological analysis is qualitative, while mechanical analysis is exclusively quantitative.
(D) Kinesiological analysis is for fundamental movements, while mechanical analysis is for major sports skills.

299. The passage defines "good posture" as an alignment that results in:
(A) Maximum muscular tension.
(B) Minimal stress on supporting structures.
(C) An exaggerated thoracic curve.
(D) A perfectly straight spine with no curves.

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300. A coach who identifies the specific muscles used by a swimmer during the freestyle stroke is performing what type of analysis?
(A) A kinesiological analysis.
(B) A purely mechanical analysis.
(C) A corrective exercise prescription.
(D) A postural deformity assessment.

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ANSWERS

1. (B) The scientific study of human or non-human body movement.
   Kinesiology represents a comprehensive field focused on the mechanics and anatomy of human movement. It integrates various disciplines such as anatomy, physiology, and biomechanics to analyze how the body functions during physical activity. This scientific approach helps in understanding motor development and rehabilitative processes. Professionals in this area utilize research to improve athletic performance, enhance ergonomics, and develop effective exercise programs for diverse populations.

2. (A) Using computational modeling and wearable sensors for performance analysis.
   Contemporary advancements in biomechanical assessment emphasize the integration of sophisticated technology to capture precise data. Utilizing computational models allows researchers to simulate complex movements and predict injury risks without invasive procedures. Furthermore, wearable sensors provide real-time metrics during actual competition, offering deeper insights into an athlete's technique. These innovations represent a significant shift from subjective observations toward data-driven methodologies in modern sports science.

3. (C) The transverse plane divides the body into superior and inferior halves.
   Anatomical planes serve as essential references for describing body orientation and movement patterns. The horizontal divider specifically splits the physical structure into upper and lower sections. This spatial arrangement is crucial for identifying rotational movements that occur around a longitudinal axis. Mastery of these conceptual boundaries allows practitioners to communicate accurately about joint actions and spatial positioning during complex athletic performances and clinical evaluations.

4. (C) Statement I is true, but Statement II is false.
   The vertical divider that splits the frame into left and right portions is accurately identified as the sagittal plane. Movements such as a forward roll occur within this specific plane rather than a side-to-side orientation. Understanding these directional boundaries is vital for biomechanical analysis in gymnastics. While many linear movements happen forward or backward, they must be correctly mapped to the appropriate anatomical reference plane for accuracy.

5. (C) Sagittal plane
   Joint actions that involve bending or straightening typically occur within the vertical divider that separates the body into right and left segments. These movements are categorized as decreasing or increasing the internal angle between articulating bones. This specific orientation is fundamental for analyzing gait, running, and most lifting exercises. Professionals use this reference to evaluate range of motion and ensure that exercises are performed with safe and effective technique.

6. (B) Doing a jumping jack (abduction and adduction of limbs)
   Movements that occur side-to-side or involve shifting limbs away from and toward the midline are categorized as existing within the frontal divider. Lateral limb actions such as those seen in certain calisthenics perfectly illustrate this concept. This plane is distinct from others as it allows for movements that split the body into anterior and posterior sections. Identifying these actions helps coaches and therapists develop specific strength and flexibility training programs.

7. (A) P-3, Q-1, R-4, S-2
   Every movement plane is associated with a specific imaginary line around which rotation occurs. Frontal movements rotate around a front-to-back line, while sagittal actions rotate around a side-to-side line. Vertical or longitudinal rotation is reserved for horizontal movements. Finally, complex or non-standard orientations require a combination of these references. Mapping these relationships is a foundational requirement for anyone studying the mechanical principles of human or animal motion.

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as the landing area, a specific diagonal angle is mathematically ideal. This position provides the perfect balance between the vertical force needed to stay in the air and the horizontal force needed to travel forward. While actual sporting conditions may require slight adjustments for air resistance or release height, this angle remains the theoretical benchmark for maximizing the range of any flying projectile.

25. (C) 1, 2, 3 and 5
A jumper's flight is dictated by several physical factors, including the initial take-off speed and the specific curve followed by the body's balance point. At the highest point of this curve, the upward movement stops momentarily before the descent begins. While air resistance exists, it is often ignored in basic models for simplicity. Importantly, once the athlete leaves the ground, their center of mass follows a fixed path that cannot be significantly altered by mid-air movements.

26. (A) Kinematics
This branch of mechanics focuses exclusively on describing the characteristics of motion, such as position, speed, and time. It does not concern itself with the underlying forces or masses that cause the movement to occur. By analyzing patterns of displacement and acceleration, researchers can create detailed maps of how an athlete moves through space. This purely descriptive approach is essential for identifying technical flaws and optimizing the geometry of various sports skills without calculating force requirements.

27. (D) Displacement
In the study of motion, certain values require both a numerical size and a specific direction to be fully described. Unlike total distance traveled, which only measures the length of the path, this specific quantity measures the straight-line change in position from start to finish. Including directional information is vital for accurately mapping movement in three-dimensional space. This distinction allows sports scientists to differentiate between an athlete's total effort and their actual progress toward a target.

28. (B) Velocity
This physical quantity describes how quickly an object changes its position in a specific direction. It differs from simple speed because it incorporates the vector component of orientation. Calculating this value involves dividing the straight-line displacement by the time elapsed. In athletic performance, knowing both the speed and the direction of movement is essential for analyzing trajectories, determining closing speeds in team sports, and optimizing the efficiency of locomotor patterns across various competitive environments.

29. (C) Rotational motion.
This field of study examines movements that occur around a fixed axis or center point. It focuses on describing changes in angular position, speed of rotation, and the rate at which rotation accelerates. Most human movements are inherently rotational as limbs swing around joints. Analyzing these circular patterns is necessary for understanding complex skills like gymnastics flips, diving twists, and the mechanics of swinging implements like bats, rackets, or golf clubs in sports.

30. (C) Statement I is true, but Statement II is false.
Linear kinetics is dedicated to studying the forces that result in straight-line or curved-line movement. However, the concept of turning effect or leverage belongs to the study of rotational mechanics rather than linear ones. While forces cause linear acceleration, the specific application of force at a distance from an axis creates rotation. Keeping these categories separate is important for a clear biomechanical analysis of whether an athlete is moving forward or spinning in place during a skill.

31. (A) Torque
In rotational mechanics, the turning effect generated by a force applied at a distance from an axis is the direct counterpart to linear force. It is the primary factor responsible for starting, stopping, or changing the rate of rotation. Understanding this concept is vital for analyzing joint movements, as muscles create this turning effect to move limbs. The magnitude of this effect depends on both the amount of force and the length of the lever arm involved.

32. (B) Moment of inertia
Just as mass resists linear acceleration, this property describes how difficult it is to change

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16. (B) Newton's First Law (Inertia)
An athlete waiting in a stationary position demonstrates the resistance to change in motion. Until the muscles generate enough force to overcome this state of rest, the individual remains immobile. This scenario illustrates a basic physical law where the tendency of an object to resist acceleration is directly related to its mass. Coaches utilize this principle to train athletes in generating explosive force to transition quickly from a stationary state to high-speed movement.

17. (B) Directly proportional to force and inversely proportional to mass.
The change in an object's velocity is determined by the amount of force applied and the resistance provided by its weight. Increasing the force results in a faster rate of speed change, whereas increasing the object's mass makes it more difficult to speed up or slow down. This relationship is central to biomechanics, as it dictates how athletes of different sizes must apply power to achieve the desired movement outcomes in various sporting disciplines.

18. (A) Law of Acceleration (F=ma)
When an athlete applies force to a ball, the resulting change in speed is determined by the intensity of the strike and the weight of the object. A harder kick provides more force, leading to a greater rate of speed increase for the ball. This interaction exemplifies the mathematical relationship between force, mass, and the resulting movement. Understanding this concept allows players to modulate their physical effort to achieve specific distances and speeds during a game.

19. (C) Newton's Third Law
Every physical interaction involves two forces that are equal in magnitude but opposite in direction. When an athlete exerts downward pressure on the track, the track exerts an identical upward force on the athlete's body. This reciprocal force is what allows for vertical propulsion and locomotion. This principle is fundamental to all athletic movements that require pushing off a surface, such as sprinting, jumping, or even swimming against the resistance of the water.

20. (A) 3, 4, 1, 2
The sequence of physical principles during a throw begins with the object remaining stationary due to its resistance to motion. Next, the athlete interacts with the ground to generate power through reciprocal forces. This leads to the application of force directly to the object to cause it to speed up rapidly. Finally, once released, the object continues its flight path until acted upon by gravity, demonstrating its tendency to stay in motion once accelerated.

21. (C) Parabola
When an object is launched into the air and only gravity acts upon it, its flight path follows a specific symmetrical curve. This shape is the result of constant horizontal speed combined with the accelerating effect of gravity in the vertical direction. In a vacuum, this path remains mathematically perfect. Understanding this trajectory is crucial for athletes in field events, as it helps them determine the optimal angles for maximizing the distance of their throws or jumps.

22. (B) Horizontal velocity
In the absence of atmospheric resistance, the speed of a flying object in the sideways direction does not change because no sideways forces are acting upon it. While the vertical speed is constantly altered by gravitational pull, the forward progress remains steady throughout the flight. This separation of horizontal and vertical components is a key concept in projectile physics, allowing for the calculation of landing points and total distance traveled by an object or athlete.

23. (D) Mass of the athlete
The path of a launched object is determined by its initial speed, the angle at which it leaves the hand, and the height of the release point. While the physical attributes of the performer influence how much force they can apply, the athlete's own weight does not directly dictate the mathematical trajectory of the object once it has been released. Focus on the release parameters is more critical for predicting the flight path and eventual landing spot of the implement.

24. (A) 45 degrees
To achieve the greatest horizontal distance when launching an object from the same level

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8. (A) Insertion
Skeletal muscles are anchored to bones at two primary locations known as the proximal and distal attachments. The point that experiences significant movement when the muscle fibers shorten is technically distinguished from the stationary end. This moving attachment site is typically located further from the center of the body. Identifying this specific point is crucial for understanding how muscular force translates into joint rotation and overall limb displacement during activity.

9. (C) The origin and insertion points of a muscle are always on the same bone.
Muscle functionality depends on the ability of the tissue to bridge at least one joint to produce motion. If both attachment points were located on the same rigid structure, the contraction would result in no skeletal displacement. Most muscles connect two different bones to facilitate articulation and movement. Understanding this bridge-like arrangement is vital for analyzing joint mechanics and predicting the specific movement outcome of any given muscular contraction.

10. (A) Both A and R are true and R is the correct explanation of A.
The primary muscle on the front of the upper arm facilitates joint bending by pulling on its distal attachment. Because its stationary end is located on the shoulder blade and its moving end attaches to the forearm bone, it successfully spans the hinge joint. When the muscle fibers contract, the distance between these points decreases, resulting in the forearm moving toward the upper arm. This anatomical layout provides a clear mechanical basis for movement.

11. (D) Extension of the knee
The large muscle group located on the front of the thigh is primarily responsible for straightening the lower leg. This action is essential for activities involving locomotion, such as walking, running, and jumping. By pulling on the patellar tendon, these muscles exert force to increase the joint angle. This group plays a critical role in stabilizing the lower limb and absorbing impact during the various phases of the human gait cycle.

12. (B) 1, 2, and 3 only
Synovial joints allow for a wide range of motion and are found throughout the limbs. Key examples include the hip, which offers multi-axial movement, and hinge joints like the knee or elbow that move in a single plane. However, the connections between skull plates are categorized as fibrous rather than cartilaginous because they are designed for stability rather than mobility. Understanding these structural differences is essential for studying human skeletal mechanics and joint health.

13. (C) Gliding
Multiaxial joints are designed to permit a high degree of mobility, including circular paths, side-to-side shifts, and bending or straightening actions. These structures allow the limb to move in almost any direction from the center of rotation. In contrast, simple sliding between relatively flat surfaces is a distinct type of joint action found in the wrists or ankles. Recognizing the limitations and capabilities of different joint types is a fundamental aspect of kinesiological and anatomical studies.

14. (D) The mechanical advantage gained by a muscle-bone system.
The efficiency of physical movement is often determined by the arrangement of the skeleton and the points where muscles apply force. This relationship defines how much output can be generated relative to the input provided by muscular contraction. Some arrangements prioritize the speed of movement, while others are designed to overcome heavy loads. Analyzing these systems allows sports scientists to understand the mechanical efficiency of different athletes and suggest technical improvements for better performance.

15. (A) Inertia
Objects tend to maintain their current state of motion unless they are influenced by an unbalanced external force. This fundamental principle of physics explains why stationary objects remain still and moving objects continue at a constant velocity in a straight line. In sports, this concept is evident when an athlete requires significant force to start a sprint or when a ball continues flying through the air until gravity and air resistance act upon it.

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the rotational state of an object. It depends not only on the total weight of the body but also on how that weight is distributed relative to the axis of rotation. In sports like diving or gymnastics, athletes can alter this resistance by changing their body shape. Tucking in limbs reduces this value, allowing the athlete to spin more rapidly without additional force.

33. (B) P-3, Q-1, R-2, S-4
Every concept in linear motion has a corresponding equivalent in the world of rotation. Weight corresponds to rotational resistance, and straight-line force corresponds to turning effect. Similarly, the momentum of a moving body is reflected in the momentum of a spinning one, and linear speed is mirrored by the rate of angular change. Identifying these pairs allows biomechanists to apply consistent physical laws across all types of movement, whether an athlete is running or spinning.

34. (A) To decrease their moment of inertia and speed up rotation.
By pulling their limbs closer to the center of rotation, an athlete reduces their resistance to spinning. This mechanical adjustment allows them to rotate much faster without needing to apply more force mid-air. This principle is widely used in sports like diving, figure skating, and gymnastics to complete multiple rotations within a limited flight time. The ability to manipulate body shape to control rotational speed is a hallmark of high-level performance in these technical disciplines.

35. (C) Friction
This force naturally occurs when two surfaces slide or attempt to slide across each other. It acts in the opposite direction of the movement, serving as a resistive factor that can either hinder or help an athlete. For example, high levels are needed for a runner to maintain grip on the track, while low levels are preferred for a skier to glide quickly over snow. Controlling this interaction is a major focus of sports equipment design and surface maintenance.

36. (D) The area of contact between the surfaces.
The magnitude of the resistive force between two moving surfaces is determined by the types of materials involved and the pressure pushing them together. Surprisingly, the total amount of surface space touching does not typically change the total resistance for dry, rigid surfaces. This counterintuitive fact means that wider tires or shoes do not necessarily increase grip through surface area alone. Instead, they often provide benefits like improved heat dissipation or reduced pressure, rather than a simple increase in resistance.

37. (C) Magnus effect
When an object spins as it moves through the air, it creates a pressure difference between its sides. This imbalance results in a lateral force that causes the flight path to curve significantly. This phenomenon is a staple of ball sports, where players use spin to make a ball dip, rise, or veer sideways. Understanding the fluid dynamics behind this curving path is essential for mastering techniques in tennis, soccer, baseball, and golf to outmaneuver opponents and targets.

38. (C) A is true but R is false.
Applying forward spin to a ball makes it drop faster due to a pressure imbalance created by the rotation. However, the physical explanation involves a high-pressure zone being created on top and a low-pressure zone underneath, rather than the opposite. This pressure difference generates a downward force that alters the trajectory. Mastery of this skill is crucial for tennis players who want to hit the ball with high power while ensuring it remains within the court boundaries.

39. (D) Coefficient of restitution
This numerical value represents the efficiency of a collision by comparing the relative speeds of objects before and after they hit. It essentially quantifies how much energy is retained as movement rather than being lost as heat or sound. In sports, this measure is used to test the quality of balls and the "springiness" of surfaces like tennis courts or running tracks. A higher value indicates a more elastic interaction, resulting in a higher and more consistent bounce.

40. (A) $e = 1$
In a perfectly efficient interaction, no kinetic energy is lost to deformation, heat, or sound during the impact. The objects involved would move apart with the same relative speed at which they approached each other. This theoretical state

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is represented by a value of unity in the standard measurement for bounce. While such perfect efficiency is impossible in real-world sports equipment, high-performance gear aims to get as close to this value as possible to maximize energy return.

41. (C) A resistive force that opposes the motion of an object through a fluid.
This force acts against the direction of an object moving through a liquid or gas, creating resistance that slows it down. It is influenced by the object's speed, its shape, and the properties of the fluid itself. In sports like swimming, cycling, and rowing, minimizing this resistance is vital for increasing speed. Athletes often use specialized equipment and specific body positions to become more streamlined and move through the environment with less interference from these forces.

42. (A) Reduce form drag caused by air resistance.
By lowering their profile and narrowing their body width, a cyclist minimizes the amount of air they must push through. This postural change reduces the pressure difference between the front and back of the rider, which is the primary source of resistance at high speeds. Reducing this resistive force allows the athlete to maintain higher velocities with the same amount of physical effort. This aerodynamic strategy is a critical component of professional racing and time-trial performance.

43. (D) Fourth Class Lever
Mechanical systems in the human body are classified into three distinct categories based on the relative positions of the pivot point, the applied force, and the weight being moved. While first, second, and third-class arrangements are all found within the skeletal system, there is no recognized category beyond these three. Understanding these three configurations is essential for analyzing joint mechanics and determining how different muscle-bone arrangements provide either a mechanical advantage for force or an advantage for speed.

44. (B) Force Arm / Resistance Arm
The efficiency of a lever is determined by comparing the distance from the pivot to the point where effort is applied against the distance from the pivot to the load. A longer distance for the input force relative to the load results in a higher mechanical advantage, making it easier to move heavy weights. This calculation is a fundamental tool for biomechanists to evaluate the effectiveness of skeletal structures and the mechanical costs of various athletic movements and lifting techniques.

45. (D) All of the above
The human body utilizes various mechanical arrangements to facilitate movement and overcome resistance. Most joint systems are designed to prioritize the speed of limbs and a wide range of motion over raw power. Common examples include the neck acting as a balance point and the calf muscles helping the body lift itself onto the toes. Recognizing these diverse arrangements is essential for understanding how the skeletal system functions as a complex series of machines optimized for human activity.

46. (D) The action of standing on tiptoes (plantar flexion).
When a person lifts their heels off the ground, the balls of the feet act as the pivot point. The weight of the entire body is concentrated between this pivot and the pulling force of the calf muscles. This specific arrangement provides a mechanical advantage that allows the muscles to lift the heavy load of the body with relatively less effort. This type of lever system is rare in the body but crucial for locomotion and maintaining vertical balance.

47. (A) Third Class
In the most common mechanical arrangement found in the limbs, the muscle pulls on the bone at a point located between the joint and the weight of the limb. This setup favors the speed of movement and allows for a large range of motion even with a small contraction of the muscle fibers. While it requires the muscle to generate more force than the actual weight being lifted, it is perfectly suited for the rapid and diverse movements required in sports.

48. (B) An alignment of body parts with minimal stress and strain on supporting structures.
Proper body alignment ensures that the skeleton and soft tissues are positioned to handle gravitational forces efficiently. This

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state reduces the unnecessary workload on muscles and minimizes the wear on joints and ligaments. Maintaining this balance is essential for preventing chronic pain, reducing the risk of injury during physical activity, and promoting optimal respiratory and circulatory function. It is a dynamic state that adapts to different tasks rather than being a rigid, unmoving position.

49. (B) Kyphosis
This postural condition involves an excessive outward bend in the upper back, leading to a rounded or hunched appearance. It can be caused by various factors, including poor sitting habits, muscle imbalances, or structural changes in the vertebrae. This deviation can lead to neck pain, reduced lung capacity, and decreased shoulder mobility. Corrective measures often include strengthening the muscles between the shoulder blades and stretching the chest muscles to restore a more neutral spinal alignment.

50. (A) 3, 4, 1, 2
A successful field event performance follows a logical progression of phases designed to build and transfer momentum. It starts with a build-up of speed, followed by a transition into a specialized footwork pattern that positions the body for the launch. The final application of force leads to the release of the implement. Finally, the athlete must decelerate and maintain balance after the effort is complete. Each phase must be executed in the correct order for maximum effectiveness.

51. (C) An exaggerated inward curvature of the lumbar spine.
This postural deviation is characterized by a significant hollow in the lower back, often causing the pelvis to tilt forward. It is frequently associated with weak abdominal muscles and tight hip flexors. While some curvature is normal, an excessive bend can lead to lower back pain and reduced structural stability. Corrective exercises generally focus on strengthening the core and glutes while improving flexibility in the front of the hips to encourage a more neutral pelvic position.

52. (D) Scoliosis
This condition involves an abnormal sideways bend of the spinal column, which can take the shape of a letter 'C' or 'S'. It can cause the shoulders or hips to appear uneven and may lead to discomfort if the curve is severe. While some cases are present from birth, others develop during growth spurts or due to muscle imbalances. Early detection and specific physical therapy are often used to manage the curvature and prevent it from progressing during development.

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53. (C) Performing dumbbell rows and reverse flyes to strengthen upper back muscles.
Addressing an exaggerated upper back curve requires a focus on the muscles that pull the shoulders back and keep the spine upright. Strengthening the posterior deltoids and the muscles between the shoulder blades helps counteract the rounded posture. Additionally, stretching the tight chest muscles can allow for a more open and neutral chest position. Consistency in these corrective exercises is vital for improving spinal health and restoring the natural balance of the upper body structures.

54. (B) Lift on an airplane wing.
When a swimmer moves their hands through the water at a specific angle, they create a pressure difference that generates an upward or forward force. This mechanical principle is identical to how air flowing over a shaped surface provides the force necessary for flight. By mastering the pitch and path of their hands, swimmers can maximize their propulsion and efficiency in the water. This concept highlights the similarities between fluid dynamics in both air and liquid environments.

55. (C) Statement I is true, but Statement II is false.
Improving an excessive lower back curve involves a targeted approach to strengthening the abdominal region and the large muscles of the buttocks. These muscles help to pull the pelvis into a more neutral alignment. Contrary to common misconceptions, this condition is often linked with overactive or tight hip flexors rather than weak ones. Understanding the specific muscle imbalances involved is essential for selecting the correct exercises to restore postural balance and alleviate associated back discomfort.

56. (A) Knock-knees
This lower limb deformity occurs when the knees tilt inward and touch each other while the ankles remain apart. It can affect walking

72. (A) $T = I\alpha$ (Torque = Moment of Inertia × Angular Acceleration)
In the world of rotation, the rate at which an object changes its spinning speed is determined by the turning effect applied and the object's resistance to that change. This relationship mirrors the linear law relating force, mass, and acceleration. This formula is a cornerstone of rotational biomechanics, used to calculate the requirements for spinning in gymnastics, diving, and skating. It allows researchers to quantify exactly how much effort is needed to achieve specific rotational speeds.

73. (C) Knock-knees (Genu Valgum)
Addressing the inward tilting of the knees often involves activities that strengthen the external rotators of the hip and the muscles on the outer side of the leg. Certain recreational activities can help encourage a wider leg position, which counteracts the deformity. Additionally, specialized footwear can improve overall alignment from the ground up. These conservative management strategies are often effective for improving joint function and reducing the structural strain associated with this common lower limb postural deviation.

74. (A) Maximize vertical ground reaction force.
To achieve maximum height in a vertical leap, an athlete must exert the greatest possible downward pressure against the surface. According to the laws of physics, the ground will push back with an equal and opposite force, propelling the body upward. Mechanical studies of this skill focus on the timing and coordination of joint movements to optimize this push. Analyzing these forces is the primary way that sports scientists measure and improve an athlete's explosive jumping power.

75. (D) Elbow (humeroulnar) joint
Some joints are restricted to movement in only one plane, functioning much like the hardware found on a door. These structures allow for bending and straightening but do not permit rotation or side-to-side shifting. This specific type of articulation is fundamental for tasks that require stability and precise directional movement. Identifying these joints is essential for understanding the mechanical limitations of the human skeleton and the specific planes in which various sporting actions must be performed.

76. (B) Mechanics
This scientific discipline is dedicated to the study of forces and their resulting effects on stationary and moving bodies. It provides the mathematical and physical foundation for understanding how objects interact within their environment. In the context of biology, these principles are applied to analyze human movement, equipment performance, and injury mechanisms. Mastery of this field is essential for anyone seeking to improve athletic technique or design better tools for sports and daily living through a data-driven approach.

77. (C) Statics and Dynamics
The study of physical systems is divided based on whether the object is in a state of balance or undergoing a change in motion. One branch focuses on stationary bodies or those moving at a constant speed, while the other examines systems where acceleration is present. These two perspectives are vital for analyzing different phases of sports, such as maintaining a stable stance versus executing an explosive sprint. Both are essential for a complete understanding of human movement.

78. (D) Sleeping
Kinesiology focuses on the active movement patterns that form the foundation of human physical activity and sporting skills. Common actions like locomotion, throwing, and jumping are extensively analyzed to understand muscle recruitment and joint mechanics. While rest is vital for recovery, the state of inactivity during rest does not involve the dynamic displacement or force production that characterizes the primary subjects of movement science. Identifying functional movement patterns is the first step in optimizing performance and health.

79. (A) Quantify the kinematics of human movement.
Specialized recording systems use multiple cameras and markers to track the precise three-dimensional position of an athlete's body parts over time. This technology allows researchers to calculate speeds, angles, and accelerations with extreme accuracy. By providing a detailed digital map of a performance, these tools help coaches identify technical errors that are invisible to the naked eye. This data-driven approach is a standard practice in elite sports for optimizing

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64. (A) P-4, Q-3, R-2, S-1
Understanding the components of a musculoskeletal system requires correctly identifying the roles of various points. Muscle attachments are distinguished by which bone stays still and which one moves. Similarly, mechanical systems are defined by the pivot point and the source of force. Correctly mapping these terms allows for a precise description of how the body functions as a series of levers. This knowledge is fundamental for biomechanical modeling and the analysis of any physical exercise or sporting skill.

65. (B) Increasing the height of the arc of the shot.
When an athlete's shots are falling short, adjusting the flight path of the ball is often the most effective solution. By increasing the vertical angle of release, the ball stays in the air longer and has a greater chance of reaching the target. This change in trajectory also creates a more favorable entry angle into the hoop. Mastery of these projection principles is essential for basketball players to improve their accuracy and consistency from various distances on the court.

66. (A) Anteroposterior axis
Lateral movements, such as side-bending or raising limbs to the side, occur within a specific plane and rotate around an imaginary line that runs from the front of the body to the back. This spatial relationship is a core concept in biomechanics. Understanding how this axis facilitates side-to-side rotation is essential for analyzing movements like cartwheels or lateral raises. Proper identification of these axes ensures that technical feedback and movement descriptions are anatomically and mechanically accurate.

67. (C) Pronation
This specific rotational movement of the forearm results in the back of the hand facing forward or upward. It occurs at the joints between the two bones of the forearm. This action is crucial for various daily tasks and sporting skills, such as dribbling a basketball or performing certain racket strokes. Understanding this movement and its opposite is essential for analyzing upper limb mechanics and ensuring proper technique in sports that involve complex hand and wrist manipulations.

68. (A) 1, 2, 3 and 4
Multiple physical forces interact during athletic performance, including the ground's push against an athlete, the resistance of air or water, and the upward force that keeps a body afloat. Additionally, any movement along a curve requires a force directed toward the center. However, the force that resists sliding always acts in the opposite direction of the movement, not the same. Recognizing these diverse forces is essential for understanding the complex physics of various sporting environments.

69. (C) The specific joint movement it produces on contraction.
When muscle fibers shorten, they generate tension that pulls on the attached bones, resulting in a change in the joint angle. This specific outcome, such as bending or straightening a limb, is what defines the functional purpose of the muscle. Describing these outcomes is a core part of kinesiology, as it allows professionals to identify which muscles are responsible for various parts of a complex athletic skill or a simple daily movement pattern.

70. (A) Both A and R are true and R is the correct explanation of A.
The most common lever system in the human body is designed with the force applied very close to the pivot point. While this requires the muscles to exert significantly more force than the actual weight of the limb, it allows for exceptionally high speeds and a broad range of motion. This trade-off is ideal for the rapid movements required in sports. Understanding this mechanical priority is essential for analyzing why human limbs are built for speed rather than maximum lifting power.

71. (D) Abduction
This movement involves moving a limb sideways away from the center of the body within the frontal plane. Common examples include raising the arms to the side or moving the legs apart during a jumping jack. It is the direct opposite of bringing a limb back toward the midline. Tracking these directional actions is fundamental for anatomical descriptions and for designing exercises that target specific lateral muscle groups in the shoulders and hips.

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the results of physical efforts. Understanding these calculations helps athletes and coaches optimize the power-to-weight ratio for improved performance.

104. (A) Increase the linear velocity of the discus upon release.
By spinning rapidly before letting go, an athlete builds up a significant amount of rotational speed. This speed is transferred into straight-line speed at the moment the object leaves the hand. A higher initial speed is the most critical factor for achieving a greater distance in throwing events. This technique allows the performer to generate more power than could be achieved from a stationary position. Mastery of this rotation is essential for maximizing performance in modern field events.

105. (A) Both Statement I and Statement II are true.
In the study of motion, change in position is categorized based on whether it occurs along a straight or curved path or around a fixed point. One measurement tracks the straight-line distance from start to finish, while the other tracks the change in the angle of orientation. Both are essential for a complete mechanical analysis of human movement. Keeping these two concepts distinct allows researchers to accurately describe both the forward progress and the limb rotations of an athlete.

106. (A) Momentum
This physical quantity represents the total "quantity of motion" an object possesses, calculated by its weight and its current speed. It dictates how difficult it is to stop a moving body and how much force it can transfer during a collision. In sports like rugby or football, athletes with high levels of this quantity are much harder to tackle. Understanding this relationship is vital for analyzing impact mechanics, ensuring safety, and optimizing power in various contact and team sports.

107. (D) It creates an upward force (Magnus effect), increasing flight time and distance.
When an object spins backward as it travels through the air, it creates a pressure imbalance that generates a lift force. This upward pressure helps keep the object in the air longer, allowing it to travel a greater horizontal distance. This phenomenon is a key strategy used by golfers to maximize their drive. By controlling the amount of backward rotation, players can significantly alter the trajectory and eventual landing spot of the ball to improve their overall game performance.

108. (B) A seesaw
A classic example of a balanced system features a pivot point located directly between the force applied and the weight being moved. This arrangement allows for a tilting action where one side moves up as the other moves down. This simple machine illustrates the fundamental principle of this lever class, where the location of the fulcrum dictates the relationship between effort and resistance. Recognizing these systems in everyday objects helps in understanding the more complex mechanical arrangements found in the body.

109. (C) Arthritis
While many conditions involve the abnormal alignment of the spine or limbs, some are medical diseases of the joints themselves. Chronic inflammation or wear and tear of joint tissues is a separate issue from structural deviations like an exaggerated spinal curve or sideways bending of the vertebrae. Differentiating between skeletal alignment issues and joint pathologies is essential for providing the correct care and selecting appropriate physical activities. One involves the shape of the system, while the other involves the health of the connections.

110. (D) The relationship between the athlete's center of mass and the bar.
High jumping requires the athlete to move their body over a horizontal obstacle using a specific technique that optimizes the path of their balance point. Researchers look at how this point travels relative to the height of the bar. Successful techniques often involve moving the body in a way that the balance point passes through or even under the bar while the actual torso clears it. This relationship is the primary mechanical indicator of efficiency in elite vertical jumping performances.

111. (A) Longitudinal axis
Rotational movements that occur within a horizontal plane, such as twisting the torso

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performance and developing effective injury prevention strategies.

80. (B) Frontal (Coronal)
A cartwheel involves a sideways rotation where the body moves along a plane that splits it into front and back portions. This lateral movement is a classic example of activity within this specific anatomical reference. Understanding this orientation is crucial for gymnasts and coaches to ensure the movement is performed with the correct alignment. Mapping skills to their primary planes is a foundational task in biomechanics that allows for a systematic and accurate description of complex athletic maneuvers.

81. (C) 1, 2, and 3 only
Rotational movements are defined by their relationship to anatomical planes and the imaginary lines around which they occur. Rotation within a horizontal plane happens around a vertical line, while side-to-side movements occur around a front-to-back line. However, movements that involve shifting limbs sideways rotate around a side-to-side line, not a front-to-back one. Accurate identification of these axes is essential for a precise mechanical description of joint actions and the overall orientation of the body during sport.

82. (A) Plantar flexion
This joint action involves increasing the angle between the foot and the lower leg, such as when a person stands on their toes or points their foot downward. It is a powerful movement driven by the large muscles on the back of the calf. This action is essential for generating propulsion during walking, running, and jumping. Analyzing this movement is a key part of studying gait and explosive power in athletes who rely on their lower limbs for performance.

83. (C) Iliopsoas
The primary muscle responsible for lifting the thigh toward the torso is located deep within the hip and lower back region. This group is crucial for high-speed running and movements that require bringing the knee up forcefully. While other muscles assist in this action, this specific group provides the most significant power for flexion at the hip joint. Maintaining strength and flexibility in this area is vital for athletic performance and for preventing imbalances in the lower back.

84. (D) Abduction of the arm
The large, triangular muscle covering the shoulder joint is primarily responsible for lifting the arm away from the body to the side. Because of its broad attachment on the collarbone and shoulder blade, and its moving attachment on the upper arm bone, it can pull the limb upward into a horizontal position. This action is a fundamental part of many sporting skills, including swimming, throwing, and various overhead movements required in sports like volleyball and basketball.

85. (C) Law of Inertia - An object at rest stays at rest
The fundamental principle of physics regarding the resistance to change in motion states that stationary objects will not move unless an external force is applied. Similarly, moving objects will maintain their velocity unless acted upon. This concept of resistance is a cornerstone of mechanics and explains why force is required to start any movement in sports. Correctly linking these principles to their definitions is essential for a clear understanding of the physical laws that govern all athletic activities.

86. (B) The speed of release
For any object launched into the air, the initial velocity is the single most important factor in determining how far it will travel. While the angle and height of the launch point are important for fine-tuning the results, they cannot compensate for a lack of initial power. Athletes in throwing events focus on maximizing this release speed through explosive force and proper technical sequencing. This principle is a universal truth in the physics of all projectile movements in sports.

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87. (B) 2, 4, 3, 1
Human joints are categorized by their structural design and the amount of movement they allow. Multiaxial structures like the hip provide the most extensive range, followed by joints that allow for specialized rotation, such as those in the forearm. Hinge joints are more restricted, moving primarily in a single plane, while the fibrous connections in the skull allow for almost no movement at all. Understanding this hierarchy

119. (D) Spinal deformities like Scoliosis
Using gravity to gently pull the body downward while suspended can help create space between the vertebrae and encourage a straighter alignment of the back. This traction effect is often used as a corrective measure for sideways curvature of the spine. By elongating the torso, individuals can reduce pressure on the spinal discs and improve overall structural balance. This approach is a common part of physical therapy programs designed to manage spinal health and improve postural integrity through non-invasive means.

120. (A) Decrease the force of impact.
When catching a fast-moving object, extending the time over which the ball is stopped reduces the average pressure on the hands. By pulling the hands back during the catch, an athlete absorbs the momentum more gradually. This technique is a fundamental safety skill in sports like cricket, baseball, and football, as it prevents injury and ensures a more secure hold on the ball. This principle of impulse and momentum is a key concept in biomechanical analysis of collision and impact.

121. (A) 1, 2, 3 and 4
Lever systems are defined by their ability to either multiply force or increase the speed of movement. Some arrangements are versatile and can achieve both, while others are specialized for one outcome. For example, some provide a constant mechanical advantage for lifting, while others always prioritize speed. The human body utilizes all these types to facilitate a wide range of physical activities. However, the load is never placed between the pivot and the force in a speed-prioritized arrangement.

122. (A) A skier gliding straight down a slope.
Motion that occurs along a straight or curved path without any rotation of the object itself is categorized as translation. In this case, every part of the skier's body moves the same distance in the same direction. This is distinct from movements that involve spinning or swinging around an axis. Identifying this type of movement is the first step in a kinematic analysis, allowing for the calculation of speed and displacement without the complexity of rotational physics.

123. (D) Rotation
The joint connecting the hand to the forearm allows for bending forward and backward, as well as shifting side-to-side. However, it is structurally restricted from spinning around its own longitudinal axis. While the hand may appear to spin, this action actually occurs higher up in the forearm where the two bones cross over each other. Understanding these joint limitations is essential for accurate anatomical descriptions and for preventing injury by ensuring joints are moved only within their natural structural boundaries.

124. (B) Newton's Third Law
The principle that every action has an equal and opposite reaction provides the physical foundation for the idea that momentum is never lost, only transferred. When two objects collide, the forces they exert on each other are identical in size but opposite in direction. This interaction ensures that the total quantity of motion within the closed system remains constant. This law is fundamental for analyzing impacts in sports and for understanding the propulsion of athletes through their environment.

125. (C) Slightly less than 45 degrees.
While a diagonal angle is theoretically ideal from ground level, the fact that the object is released from a certain height above the landing area changes the physics. To maximize the horizontal distance from an elevated release point, a slightly lower trajectory is more effective. This adjustment allows the object to maintain more horizontal speed while still staying in the air long enough to achieve a great distance. This practical application of physics is a key technical focus for elite shot putters.

126. (C) P-4, Q-2, R-1, S-3
Different joint actions are categorized by the direction of movement and the plane in which they occur. Spinning the head to the side is a rotational movement, while drawing a circular path with a limb involves a complex combination of several actions. Bringing a limb toward the center of the body and pulling the foot upward toward the shin are also distinct movements. Mastery of these terms is essential for describing physical activities and for professional communication in anatomy and sports.

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96. (B) Bracing and, in severe cases, surgery.
Addressing outward bowing of the legs often requires structural intervention rather than simple muscle strengthening. For young children, corrective supports can help guide bone growth into a more neutral alignment. In more significant or adult cases, medical procedures may be necessary to realign the limbs properly. While some exercises can improve overall stability, the underlying skeletal deviation often requires professional medical oversight to prevent long-term joint damage and ensure a functional gait throughout the individual's life.

97. (B) Swing phase and stance phase.
The cycle of walking is divided into two primary parts based on whether the foot is in contact with the ground or moving through the air. One part involves the limb providing support and generating force, while the other involves the limb moving forward to prepare for the next step. Analyzing these alternating periods is the foundation of gait analysis. It allows practitioners to identify inefficiencies, imbalances, or abnormalities that could lead to injury or reduced movement efficiency during locomotion.

98. (A) The sequential activation of body segments to generate maximum velocity.
To achieve maximum speed in a throw, an athlete must coordinate a chain of movements starting from the ground and ending at the hand. Force is generated in the large leg muscles, transferred through the core and torso, and finally through the smaller muscles of the arm and wrist. When each segment reaches its peak speed just before the next one starts, the total velocity is maximized. This mechanical concept is essential for mastering high-power skills in various sporting disciplines.

99. (C) Anteroposterior (Sagittal) axis
Every plane of motion has a corresponding imaginary line around which rotation occurs. The line that pierces the body from front to back is the central reference for movements that happen side-to-side, such as lateral leg raises or side-bending. Proper identification of this axis is essential for a precise anatomical and mechanical description of movement. By linking planes to their correct axes, sports scientists can accurately model human motion and provide clear technical instructions for improving athletic performance and technical form.

100. (B) 1, 2, and 3 only
Biomechanics is a specialized field that uses physics and engineering principles to study living organisms. It can involve detailed numerical measurements or more descriptive, non-numerical observations. However, a purely descriptive approach does not typically involve measurement, as measurement is the defining characteristic of a numerical, or quantitative, analysis. Recognizing these different levels of study is important for choosing the right methods for athletic evaluation and research in the complex field of human and animal movement science.

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101. (C) Flexion
This movement involves bending a limb at a joint, resulting in a reduction of the space between the connecting bones. It is a fundamental action found in almost every physical activity, such as bending the elbow during a curl or the knee during a squat. This action typically occurs within the sagittal plane. Understanding this term is basic for anatomical study and for describing the various phases of more complex sporting movements like jumping, running, and swimming.

102. (B) Gastrocnemius and Soleus
The powerful muscles located on the back of the lower leg are the primary drivers for pointing the toes and pushing off the ground. These tissues work together to lift the heel and provide the explosive force needed for running and vertical leaping. Strengthening these muscles is a major priority for athletes who require high levels of lower body power. Their coordination and strength are essential for maintaining stability and generating the necessary propulsion for high-performance locomotion in sports.

103. (D) 10 m/s^2
The rate at which an object changes its speed is directly determined by the amount of force applied divided by the object's mass. In this case, applying a specific amount of force to a body of a certain weight results in a predictable change in velocity. This mathematical relationship is a core law of physics used in biomechanics to predict

patterns and put undue stress on the inner parts of the knee joint. Causes can range from genetic factors to nutritional deficiencies during early development. Management often includes specific strengthening exercises for the hip muscles and, in some cases, the use of orthotic inserts to improve leg alignment and reduce long-term joint wear.

57. (C) Genu Varum - Knock-knees
Accurate terminology is vital for identifying postural deviations. While one term refers to the inward tilting of the knees, the other describes an outward bowing where the knees stay wide apart even when the feet are together. These two conditions are opposites and require different corrective approaches. Misidentifying them can lead to inappropriate exercise prescriptions. Mastery of these medical terms ensures clear communication between coaches, athletes, and medical professionals when discussing structural alignment and joint health.

58. (A) Pes Planus (Flat Foot)
This condition is marked by the collapse or absence of the natural arch on the inner side of the foot. When standing, the entire sole of the foot makes contact with the ground. This lack of a stable arch can affect the body's ability to absorb shock and may lead to pain in the feet, ankles, and knees. Strengthening the small muscles within the foot and using supportive footwear are common methods used to manage this structural issue.

59. (D) Flat foot
Corrective movements for an absent foot arch focus on activating and strengthening the internal muscles that support the bridge of the foot. By performing tasks that require curling the toes or shifting weight in specific ways, individuals can help rebuild the structural integrity of the area. These exercises improve the foot's ability to act as a functional shock absorber during walking and running. Consistent practice can reduce discomfort and prevent secondary issues in the legs and lower back.

60. (B) Kinesiological analysis
This type of evaluation focuses on identifying the specific muscle groups that are active during a movement and the joint actions they produce. It goes beyond simple observation by linking anatomical knowledge to functional performance. By understanding which muscles act as prime movers and which provide stability, practitioners can design highly effective training and rehabilitation programs. This approach is essential for optimizing the human body's efficiency and ensuring that movements are performed with the correct muscular sequencing.

61. (C) The metabolic energy system used by the player.
Mechanical evaluations of sporting techniques focus on the physical parameters of motion, such as speed, force, and trajectory. They examine how body parts interact and the resulting movement of equipment like rackets or balls. While internal chemical processes and energy production are vital for overall performance, they fall under the separate domain of physiology. A purely mechanical study prioritizes the geometry and physics of the skill to identify technical improvements that can maximize the output of the movement.

62. (D) One foot is in contact with the ground.
The cycle of human locomotion is divided into distinct periods based on whether the limb is providing support or moving forward through the air. The support period begins when the foot touches the surface and ends when it leaves. During this time, the body must manage significant impact forces and generate the propulsion necessary for the next step. Analyzing this phase is critical for identifying gait abnormalities and optimizing the efficiency of running and walking patterns.

63. (A) Hamstrings and Gluteus Maximus
Powerful backward movement of the upper leg is a primary requirement for generating speed during the drive phase of running. This action is driven by a combination of the large muscles on the back of the hip and the thigh. These muscles work together to push the body forward by extending the hip joint forcefully. Training these specific groups is a major focus for sprinters and athletes in sports that require explosive acceleration and high-speed locomotion.

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or spinning in place, always rotate around a vertical line that runs from head to toe. This spatial relationship is a fundamental concept in biomechanics. Identifying this axis is essential for analyzing the technical aspects of skills that involve rotation, such as a discus throw or a figure skater's spin. Proper mapping of planes and axes ensures that movement descriptions and evaluations are accurate and professional.

112. (B) Opposition
This unique and highly specialized movement allows for a precise grip by bringing the first digit into contact with the others. It is a defining characteristic of human hand function, enabling the fine motor control needed for grasping equipment like bats, rackets, or small implements. This action involves a combination of several joint movements at the base of the thumb. Understanding this capability is essential for analyzing hand mechanics and for developing rehabilitation programs for hand injuries and neurological conditions.

113. (B) Rectus femoris
The muscle group on the back of the thigh consists of three distinct parts that work together to bend the knee and extend the hip. However, the large muscle on the front of the thigh is part of a completely different group with the opposite function. Keeping these anatomical groups separate is vital for understanding joint actions and for designing balanced strength training programs. Knowing which muscles belong to each group is a foundational requirement for students of anatomy and kinesiology.

114. (A) Both A and R are true and R is the correct explanation of A.
Overcoming the initial resistance of an object at rest requires more force than maintaining its movement once it is already sliding. This is because the bond between surfaces is stronger when they are stationary. Once motion begins, the resistive force drops slightly to a lower, steady level. This physical reality explains why the most difficult part of moving a heavy object is the initial push. Athletes and weightlifters must account for this difference when performing tasks that involve shifting heavy loads.

115. (C) Its initial vertical velocity and the height of projection.
The total time an object spends in the air is entirely dependent on its upward speed and how far it has to fall back to the ground. Gravity acts as a constant downward pull, determining how long it takes for the upward movement to stop and the descent to complete. While horizontal speed determines how far it travels sideways, it has no effect on the duration of the flight. This principle is a key concept in calculating trajectories for various sporting implements.

116. (D) Radians per second (rad/s)
The rate of rotational change is measured using a unit that tracks the change in angle over time. While linear speed uses meters, rotational speed uses a circular measurement based on the radius of the circle. This standard unit is used in biomechanics to quantify the spinning speed of limbs, tools, and the entire body during athletic skills. Using consistent units is essential for accurate calculations and for comparing the performance of different athletes in scientific studies of rotation.

117. (C) Torque
This mechanical concept refers to the rotational effect generated when a force is applied at a distance from a pivot point. It is the fundamental driver of all joint movements, as muscles pull on bones to create this turning influence. The magnitude of this effect is determined by both the amount of force and the length of the lever. Understanding this relationship is vital for analyzing the efficiency of skeletal arrangements and for teaching proper technique in strength training and sports skills.

118. (B) The CG of the human body is a fixed point that never changes.
The point of balance in a human body is dynamic and shifts whenever the body changes its shape or posture. Moving the arms or bending the legs redistributes the body's mass, causing this point to move. In some positions, such as a deep bend, this balance point can even be located in the empty space outside the physical frame. Tracking this point is essential for analyzing stability and the efficiency of complex movements in sports like gymnastics and high jumping.

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is essential for analyzing human mobility and identifying structural limitations in performance.

88. (A) Kinetics
This branch of mechanics is dedicated to studying the relationship between forces and the resulting motion of a body. It looks beneath the surface of movement to understand the underlying causes, such as muscular force, gravity, and ground reaction forces. By calculating the energy and power required for specific actions, researchers can gain a deeper understanding of human efficiency and the mechanical demands of different sports. This field is distinct from the purely descriptive study of motion.

89. (C) All parts of the body move the same distance.
During rotational movement, points at different distances from the center of rotation travel through different path lengths, even though they cover the same change in orientation. A point further from the axis moves much further than one closer to it. This distinction is vital for understanding the mechanics of swinging implements, where the end of a bat or club moves significantly faster than the handle. Recognizing these differences is a core part of analyzing any activity that involves rotation.

90. (A) Angular momentum
When an athlete pulls their limbs toward the center of their spin, they reduce their resistance to rotation. According to physical laws, if no external turning force is applied, the total amount of rotational motion must remain the same. This means that as the resistance decreases, the speed of rotation must increase to compensate. This principle is a fundamental tool for performers who need to control their spinning speed through body adjustments alone, without any additional physical effort.

91. (A) P-3, Q-4, R-1, S-2
Various postural deviations have common names that describe their appearance. An exaggerated upper back curve is often called a hunchback, while an excessive lower back curve is known as swayback. Inward tilting knees are referred to as knock-knees, and the loss of the foot's arch is simply termed flat foot. Mastery of both the technical and common terminology is essential for effective communication in sports medicine, physical education, and clinical assessments of physical structure and health.

92. (B) Force of friction to the normal force.
The relative grip between two surfaces is mathematically expressed as a ratio of the resistive force to the pressure pushing the surfaces together. This value is a constant for any specific pair of materials and determines how easily they will slide across each other. In sports, this ratio is used to design better shoe soles, improve track surfaces, and select the right tires for racing. A higher value indicates a "grippier" interaction, which is often desirable for stability and traction.

93. (C) The objects stick together after impact.
In an interaction where objects do not bounce apart, all available energy is used to deform the bodies or is converted into other forms like heat. The two objects move as a single unit after the collision. This represents the absolute minimum in terms of bounce efficiency. While rare in many ball sports, this concept is important for understanding collisions in contact sports like rugby or football, where players often engage and move together following a successful tackle or block.

94. (D) Form Drag
Aerodynamic resistance at high speeds is largely caused by the pressure difference between the front and back of a moving object. By giving a helmet a smooth, tapered shape, designers ensure that air flows more cleanly around it, reducing the wake created behind the rider. This streamlined design minimizes the backward-pulling force, allowing the athlete to move through the air with less effort. This focus on shape is a primary strategy for increasing speed in high-velocity racing.

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95. (A) First Class
When the muscle on the back of the upper arm contracts to straighten the limb, the elbow joint serves as a balance point located between the force and the weight. This mechanical arrangement is similar to a seesaw or a pair of scissors. It allows the muscle to apply force on one side of the pivot to move the load on the other. This type of lever system is used in the body to facilitate specific movements that require a balancing or tilting action.

127. (A) Force × Perpendicular distance from the axis
The turning effect of a push or pull is calculated by multiplying the intensity of the force by the length of the lever arm. This distance must be measured at a right angle to the direction of the force for an accurate result. This formula is a fundamental tool in biomechanics for determining the strength requirements of various joint movements. It explains why a longer wrench or a muscle with a further attachment point can generate more leverage for a given effort.

128. (B) It increases.
As an athlete transitions from a compact shape to a fully extended one, their mass is moved further away from the center of rotation. This change in distribution makes it significantly harder to spin, effectively increasing the body's resistance to angular acceleration. This physical principle is used by divers to slow down their rotation just before entering the water, ensuring a clean and controlled entry. Understanding these adjustments is essential for mastering any sport that involves complex aerial maneuvers and spinning.

129. (B) Weight of the fluid displaced by the object.
The upward force exerted by a liquid on a submerged or floating body is determined by the amount of liquid the body pushes aside. According to the laws of physics, this force is exactly equal to the weight of that displaced volume. This principle explains why some objects float while others sink. In swimming, understanding this force is vital for maintaining an efficient body position and maximizing buoyancy to reduce the effort needed to stay at the surface of the water.

130. (A) Speed and range of motion
The most common mechanical system in the body is designed with the force applied very close to the joint. This requires the muscles to pull much harder than the load being moved, but it allows the end of the limb to move extremely fast through a large arc. This arrangement is perfectly suited for the rapid and diverse movements required in athletic performance, where speed is often more valuable than raw lifting power. Recognizing this priority is key to understanding human anatomy.

131. (C) Identifying the agonist and antagonist muscles at the hip and knee.
A study of this exercise from a functional movement perspective focuses on identifying which muscles are actively shortening to drive the motion and which are lengthening to control it. By mapping the roles of the various muscle groups in the lower body, researchers can determine the efficiency of the technique and ensure that the correct structures are being targeted. This approach is essential for designing effective strength programs and for providing technical feedback that improves performance and reduces injury risk.

132. (D) Tibial tuberosity via the patellar tendon
The large muscle group on the front of the thigh converges at a single point on the upper part of the shin bone. This attachment point is the final link in the chain that allows these muscles to straighten the knee. By pulling on this specific bony protrusion, the muscles generate the force needed for locomotion and jumping. Identifying this location is essential for understanding the mechanics of the knee joint and for diagnosing issues related to the tendon that connects these structures.

133. (C) Angular motion is also known as translation.
Biomechanical terminology differentiates between movements along a path and movements around an axis. While shifting the entire body from one place to another is a descriptive term for linear progress, spinning or swinging actions are categorized as rotational. These two types of motion follow different physical laws and require separate methods of analysis. Most sporting skills involve a combination of both, making it essential for students to clearly distinguish between them to accurately describe and evaluate complex athletic performances and techniques.

134. (A) 2, 3, 1, 4
The study of human and animal movement has evolved from ancient philosophical observations to modern computational sciences. Early descriptions of movement provided the foundation, followed by the formalization of the physical laws of motion in the seventeenth century. Technological advancements in the twentieth century allowed for the high-speed recording of performance. Today, the field utilizes

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164. (D) Shoulder adduction, extension, and internal rotation.
The broad, powerful muscle of the back is responsible for pulling the arm downward, backward, and spinning it inward toward the body. Because of its large attachment on the spine and hip, and its moving attachment on the upper arm, it can generate significant force for various athletic tasks. This muscle is essential for swimming, rowing, and any movement that involves pulling or climbing. Strengthening this group is a major priority for athletes who require high levels of upper body pulling power and stability.

165. (C) Conservation of angular momentum
An athlete can control their spinning speed mid-air by changing their body shape to alter their resistance to rotation. If no external turning force is applied, the total quantity of rotational motion must remain constant. This means that as the body becomes more compact and resistance decreases, the speed of rotation must increase to compensate. This mechanical principle is a fundamental tool for gymnasts, divers, and figure skaters to complete multiple rotations within a limited timeframe by using only internal body adjustments.

166. (B) Create an aerodynamic lift force.
By positioning their body at a specific angle during flight, a ski jumper can use the air flowing over them to generate an upward force. This lift helps keep them in the air longer, significantly increasing the total distance they can travel. This aerodynamic strategy is identical to the principles used in aircraft design. Mastering this body position is essential for elite performance in the sport, as it allows athletes to maximize their flight time and distance through the efficient use of the surrounding environment.

167. (D) The conservation of momentum in a collision.
Mechanical systems like levers are used throughout sports to increase force or speed, such as in the swing of a bat or the pull of an oar. These involve a pivot, a force, and a load. However, the principle that total motion is maintained during an impact is a broader law of physics that does not depend on a lever arrangement. Keeping these concepts separate is important for a clear biomechanical analysis of different types of movement and interaction in various sporting environments and activities.

168. (A) Kyphosis
Certain physical exercises that involve deep spinal movements can help counteract an excessive upper back curve. By stretching the spine and the associated muscles, these techniques encourage a more flexible and neutral alignment. This approach helps reduce the rounded appearance of the back and can alleviate discomfort caused by poor posture or muscle imbalances. Consistency in these corrective movements is a common part of physical therapy and holistic wellness programs designed to maintain spinal health and improve overall structural integrity.

169. (C) The symmetry and efficiency of the gait pattern.
Evaluation of walking for individuals with artificial limbs focuses on ensuring that the movement is balanced and that both sides of the body are working together effectively. A smooth, rhythmic gait reduces the risk of long-term joint pain and improves the overall functionality of the prosthesis. Researchers look for patterns that minimize energy waste and provide the most natural locomotion possible. This kinesiological focus is essential for helping individuals regain mobility and maintain a healthy, active lifestyle following the loss of a limb.

170. (A) The delivery/release phase
The success of a high-power field event depends largely on the final moment when the implement is launched. This phase is where all the momentum built up during the approach is transferred into the object. Researchers analyze the speed, angle, and timing of this action to identify ways to improve the total distance. This critical moment is the culmination of the entire skill and is the primary focus for technical correction and performance enhancement in various competitive throwing disciplines and events.

171. (D) Adduction
This joint action involves bringing a limb toward the center of the body within the frontal plane. It is the direct opposite of moving a limb away from the midline. This movement is common in many athletic activities, such as bringing the arms

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142. (D) Second Class
In this mechanical arrangement, the load is positioned between the pivot point and the source of effort. This setup provides a significant mechanical advantage, allowing a person to move a large weight with less force. While common in tools like wheelbarrows, this configuration is also found in specialized mobility devices where the wheels act as pivots and the user's weight is balanced in the middle. Recognizing this lever class is essential for understanding the mechanical efficiency of assistive devices and certain human movements.

143. (A) Performing pelvic tilts to flatten the lower back.
Addressing an exaggerated curve in the lower spine requires specific movements that help realign the pelvis and reduce the hollow in the back. By intentionally tilting the hips backward, individuals can engage their abdominal muscles to stretch the lower back area. This corrective technique helps restore a more neutral spinal position and alleviate pressure on the vertebrae. Consistency in these exercises is vital for improving long-term postural health and preventing chronic discomfort associated with excessive lumbar curvature and muscle imbalances.

144. (B) The chronological order of movements of different body parts.
Achieving maximum efficiency in a complex skill requires a precise timing of actions across the entire body. Force is generated and transferred through a series of segments, starting with the larger muscles and ending with the faster ones. Analyzing the timing and order of these actions is a core part of a mechanical study. Proper coordination ensures that the total force is maximized at the moment of release or impact, which is essential for high-level performance in throwing, jumping, and striking.

145. (B) Supination
This rotational action of the forearm results in the palm facing upward or toward the front of the body. It is the natural position when carrying an object in the palm or during the upward phase of many lifting exercises. This movement occurs at the joints between the two bones of the forearm. Understanding this action and its opposite is essential for analyzing hand and wrist mechanics, ensuring proper technique in sports, and developing effective rehabilitation protocols for upper limb injuries and conditions.

146. (A) Kinematics
This branch of mechanics is exclusively concerned with describing the characteristics of motion, such as position, speed, and timing. It focuses on the patterns of movement without calculating the underlying forces or weights that cause them. By providing a detailed map of an athlete's trajectory and limb angles, it allows coaches to identify technical flaws and optimize movement geometry. This descriptive approach is a foundational tool in sports science for the objective evaluation of performance across all types of physical activity.

147. (C) A is true but R is false.
An athlete can significantly increase their spinning speed by changing their body shape, but this change does not involve an increase in their total quantity of rotational motion. Instead, it involves reducing their resistance to spinning, which forces the speed to go up to keep the total motion constant. This mechanical principle is a fundamental tool for performers who need to control their rotational speed mid-air or on the ice. Understanding this distinction is essential for accurately describing the physics of rotational sports and skills.

148. (D) Suture joint of the skull
Most joints in the human limbs are designed for mobility and contain a specialized fluid that reduces friction. These structures allow for a wide range of movements such as bending, spinning, and shifting. However, some connections in the skeletal system are intended for absolute stability and protection of internal organs. These rigid junctions are filled with tough tissue that prevents any movement between the bones. Differentiating between these mobile and immobile connections is a fundamental part of studying human anatomy and structural mechanics.

149. (C) Abduction
The large muscle covering the shoulder is the main driver for raising the arm sideways away from the center of the body. Because of its broad

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attachment on the collarbone and shoulder blade, and its moving attachment on the humerus, it pulls the arm upward. This action is essential for overhead sports, swimming, and various daily lifting tasks. Analyzing this muscle's function is a key part of studying shoulder mechanics and ensuring proper form in strength training and athletic performance evaluations.

150. (B) 1000 m/s^2
The rate at which an object speeds up is mathematically determined by the amount of force applied divided by the object's mass. In this scenario, a high level of force acting on a relatively light object results in a very high rate of acceleration. This calculation is a core application of physical laws in biomechanics, allowing for the precise measurement of an athlete's power and the resulting movement of equipment. Accurate calculations are essential for tracking performance improvements and for scientific research in sports.

151. (D) Principle of impact
When an object strikes a surface and bounces off, the path it takes after hitting is determined by the path it took on the way in. Specifically, the angle at which it approaches the surface will be mirrored by the angle at which it leaves, assuming a clean interaction. This fundamental concept is crucial for players in ball sports like tennis, billiards, and basketball. Understanding these rebound patterns allows athletes to accurately predict where a ball will go after striking the floor, wall, or backboard.

152. (B) 1, 2, 3 and 5
Frictional force is a resistive influence that occurs whenever surfaces slide or try to slide across each other. It is categorized based on whether the surfaces are currently moving or stationary. Generally, rolling resistance is significantly lower than sliding resistance, which is why wheels are so efficient. However, adding lubricants reduces this resistance rather than increasing it. Understanding these factors is essential for optimizing grip and speed in sports through the careful selection of equipment, surface materials, and maintenance techniques.

153. (C) Drag force
Moving through a liquid environment creates significant resistance that can slow an athlete down. To maintain high speeds with less effort, swimmers must adopt a shape that allows the liquid to flow smoothly around their bodies. This minimizes the pressure difference between the front and back, which is the main source of backward-pulling force. Aerodynamic and hydrodynamic principles are essential for optimizing performance in sports where athletes must overcome the resistive properties of the surrounding environment to achieve maximum speed.

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154. (A) Second Class
A common mechanical arrangement features a load positioned directly between the pivot point and the application of force. This setup provides a mechanical advantage, making it easier to lift and transport heavy weights. While this is the standard design for many industrial tools, it also serves as a model for certain human movements where weight is balanced over a fulcrum. Understanding this configuration is key to analyzing how simple machines and biological systems can move significant resistance with relatively less physical effort.

155. (C) Statement I is true, but Statement II is false.
Proper body alignment is vital for minimizing structural stress and ensuring that the internal systems of the body can function efficiently. Maintaining this state is a dynamic process that requires the constant, subtle engagement of various muscle groups to counteract the effects of gravity. It is not a passive or effortless state. Recognizing the muscular effort involved in good posture is essential for developing effective training programs that strengthen the supporting structures and prevent the development of chronic pain and postural deviations.

156. (B) The initial trajectory of the ball.
The exact moment and location where an athlete lets go of the ball determines its starting speed, angle, and path toward the goal. This point is a critical factor in the success of the skill, as it dictates the geometry of the shot. A higher or lower release can significantly change the accuracy and entry angle of the ball. Biomechanical studies of this skill focus on identifying the most effective

release parameters to help athletes develop a more consistent and successful shooting technique.

157. (C) Circumduction
This complex movement involves a limb following a circular path that creates a cone-like shape in space. It is not a simple rotation, but rather a sequence of several different joint actions performed in order. This capability is found in highly mobile joints like the shoulder and hip, allowing the limb to move through a wide range of positions. Identifying this action is important for describing athletic maneuvers and for understanding the total mobility available at various joints in the human body.

158. (D) Knee flexion and hip extension
The large muscle group on the back of the thigh is unique because it crosses two different joints, allowing it to perform two distinct primary actions. It is responsible for bending the leg at the knee and for pulling the thigh backward from the hip. This dual role is essential for the powerful drive needed in running and jumping. Strengthening and maintaining the health of these muscles is a major focus for athletes who require high levels of lower body power and mobility for performance.

159. (A) A net external force acts on it over time.
The total quantity of motion possessed by a body can only be altered if it is influenced by an unbalanced force applied over a specific period. This change is directly related to the intensity and duration of the push or pull. This principle, known as impulse, is a key concept in biomechanics for understanding how athletes generate speed or absorb impact. It explains why a long, sustained force can be more effective than a short, sharp one for achieving high-speed movement in sports.

160. (B) The study of systems in a constant state of motion.
This branch of mechanics focuses on bodies that are either stationary or moving at a steady velocity without any acceleration. In these systems, all the forces acting on the body are perfectly balanced, resulting in a state of equilibrium. Studying these conditions is essential for analyzing tasks that involve maintaining balance, such as a handstand in gymnastics or a stable shooting stance. Understanding how to achieve and maintain this state of balance is a fundamental requirement for many technical sporting skills and activities.

161. (B) The ground reaction forces.
Sophisticated monitoring platforms are used to measure the intensity and direction of the pressure an athlete exerts on the surface during movement. This data is essential for calculating the force the surface pushes back with, which is what propels the body forward or upward. By tracking these forces over time, researchers can gain detailed insights into an athlete's power, balance, and movement efficiency. This quantitative approach is a standard tool in modern sports science for optimizing technique and identifying potential injury risks in various activities.

162. (C) P-3, Q-1, R-4, S-2
Every plane of motion is linked to a specific axis around which rotation occurs. Side-to-side movements rotate around a front-to-back line, while bending actions rotate around a side-to-side line. Twisting or spinning occurs around a vertical line, and complex maneuvers like somersaults require specific axial rotations. Correctly mapping these relationships is essential for a precise mechanical description of human movement. This knowledge allows biomechanists to systematically analyze and evaluate the technical performance of athletes in a wide range of sporting disciplines.

163. (C) Fibrous
Certain connections between bones are designed for maximum stability and contain tough tissue that prevents any movement. These rigid junctions are typical in areas where protection of internal organs is more important than mobility, such as the skull. These are structurally distinct from the more common mobile joints found in the limbs. Differentiating between these various types of skeletal connections is a fundamental part of studying human anatomy and understanding the mechanical differences between areas meant for movement and those meant for structural integrity.

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between force and acceleration, and the idea of reciprocal actions. While the principle regarding the total amount of work and heat in a system is a cornerstone of physics, it belongs to a different area of study. Knowing which rules belong to the core laws of motion is essential for foundational movement science.

195. (A) P-4, Q-1, R-2, S-3
Multiple physical concepts are applied throughout various sports to explain the behavior of athletes and equipment. These include the effects of spin on a ball's flight, the relationship between body shape and rotational speed, the efficiency of impacts, and the forces generated by pushing off a surface. Correctly linking these scientific principles to their real-world applications is essential for a scientific understanding of sports. This knowledge allows for better technical instruction, improved equipment design, and more effective performance evaluations in athletic fields.

196. (D) Dynamics
This field of mechanics is dedicated to studying bodies that are undergoing a change in their state of motion. It examines the relationship between unbalanced forces and the resulting acceleration of masses. Unlike systems in equilibrium, these studies focus on how movement is initiated, stopped, or altered. This perspective is vital for analyzing explosive sporting actions like sprinting, jumping, and striking, where the ability to change speed rapidly is the primary indicator of athletic performance and technical success.

197. (C) Jaw and shoulder girdle
These specific movements involve shifting a body part forward and pulling it back toward the spine or torso. These actions are common in the structures that support the upper limbs and the lower part of the skull. This capability is essential for various daily tasks and for maintaining proper postural alignment. Understanding these directional movements is a fundamental part of studying human anatomy and for diagnosing and treating structural issues in the neck, jaw, and upper back regions.

198. (B) Hip extension
The largest muscle of the buttocks is the primary driver for pulling the leg backward from the hip. This powerful action is essential for generating the drive needed for running, climbing, and jumping. It is also critical for maintaining an upright posture and for stabilizing the torso during various physical activities. Strengthening this muscle is a major priority for athletes who require high levels of lower body power and stability for performance in both explosive and endurance-based sports.

199. (D) Torque
This mechanical concept describes the turning effect generated when a force is applied at a distance from a fixed axis. It is the fundamental cause of all rotational movements in the body, as muscles pull on bones to rotate them around joints. The size of this influence is determined by both the amount of force and the length of the lever involved. Understanding this relationship is vital for analyzing the efficiency of skeletal arrangements and for teaching proper technique in all types of physical exercise.

200. (B) 1, 2, and 3 only
Various postural deviations involve abnormal spinal curvatures that can affect health and performance. These include sideways bends, excessive rounding of the upper back, and hollows in the lower back. These conditions are often linked to muscle imbalances, such as weak abdominal muscles or tight hip flexors. However, certain terms are frequently confused, such as misidentifying a bowing of the legs for an inward tilting of the knees. Accurate terminology is essential for professional structural assessment and for selecting appropriate corrective exercises.

201. (C) Squatting
The ability to bend and straighten the legs while maintaining control and balance is a foundational requirement for many higher-level physical skills. This movement pattern develops the strength and stability in the lower body needed for successful jumping, landing, and explosive locomotion. Mastering this basic action is often the first step in athletic training and rehabilitation. It provides a baseline for evaluating an individual's functional movement quality and for identifying structural issues that could lead to injury during more complex activities.

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back to the sides after a jumping jack or crossing the legs. Understanding this term is essential for anatomical descriptions and for designing exercises that target the muscles responsible for bringing the limbs inward toward the body's vertical axis.

172. (B) Elbow extension
The large muscle on the back of the upper arm is the primary driver for straightening the limb. By pulling on the bone of the forearm at the elbow joint, it increases the joint angle. This action is essential for various athletic movements, such as pushing off in a swimming stroke or throwing a ball. Strengthening this muscle is a common goal in strength training to improve upper body power and stability in both sporting performances and activities of daily living and movement.

173. (A) 2 - 3 - 1
A specific mechanical system is defined by the relative positions of the pivot, the load, and the source of force. In this particular arrangement, the weight being moved is located in the middle, between the balance point and the application of effort. This configuration provides a mechanical advantage, allowing a person to lift heavy loads with relatively less physical force. Recognizing this structural order is essential for identifying this class of lever in both human movements and various tools used in sports and daily life.

174. (D) The object's color
The flight path of any launched implement is determined by physical factors such as its initial speed, the angle of the launch, and the height from which it was released. These parameters dictate the geometry of the trajectory and the eventual landing spot. While atmospheric conditions and the shape of the object can also play a role, the visual appearance or surface pigment has no mechanical effect on the movement through space. Focusing on the correct physical variables is essential for a scientific analysis of motion.

175. (A) Linear velocity = angular velocity × radius.
For any object rotating around a center point, the speed at which a specific part moves in a straight line depends on both the rate of spinning and the distance from the center. A point further out will move significantly faster than a point close to the axis, even though they both complete a rotation in the same amount of time. This mathematical relationship is a key concept in biomechanics for understanding the efficiency of swinging tools like bats, rackets, and golf clubs in sports.

176. (B) A rowing boat
In this particular mechanical system, the force is applied between the pivot point and the resistance of the water. This arrangement is designed to prioritize the speed and range of the movement rather than multiplying force. While it requires a greater effort from the athlete, it allows the end of the tool to move through a much larger distance very quickly. This class of lever is commonly used in various sporting implements where generating high limb or tool speed is the primary technical goal.

177. (B) Genu Varum
This lower limb deviation is characterized by the knees staying wide apart even when the feet are brought together, creating an outward curve in the legs. It is the structural opposite of knock-knees. This alignment can put uneven pressure on the knee joints and may affect the efficiency of an athlete's gait. Management often involves specific exercises to improve stability and, in some cases, medical intervention to guide proper bone growth or alignment. Understanding this condition is vital for structural assessment.

178. (A) Optimize stride length and stride frequency.
High-speed running is a result of the balance between how far each step travels and how many steps are taken in a specific time. Mechanical evaluations focus on finding the ideal combination of these two factors for each individual athlete. By analyzing the timing and geometry of the legs during the gait cycle, coaches can identify technical adjustments that maximize speed while minimizing energy waste. This data-driven approach is a standard method for improving performance in various track and field disciplines.

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179. (C) Hinge joint
This specific type of skeletal connection is restricted to movement in only one plane, much like the mechanism found on a standard door. It allows for bending and straightening actions but prevents rotation or sideways shifting. These structures provide a high degree of stability for

artificial intelligence and complex modeling to analyze movement with unprecedented detail. This progression highlights the ongoing integration of technology and physical science in the study of movement.

135. (D) Alignment of the shoulders and hips relative to the target.
Different technical approaches in high-speed ball delivery are defined by the orientation of the athlete's torso during the final stride. One style involves keeping the chest and pelvis facing the target, while the other involves a more sideways position. This alignment significantly affects the mechanical stress placed on the lower back and the potential for generating speed. Biomechanical analysis of these variations is essential for helping athletes maximize their performance while minimizing the risk of serious overuse injuries during their careers.

136. (A) Rotation (Shaking head 'no')
The specialized joint at the very top of the spinal column is designed specifically to allow for circular movement of the head. This pivot-like articulation enables the first vertebra to spin around a bony projection on the second one. This capability is essential for scanning the environment and for various sporting actions that require turning the head to track a ball or opponent. Understanding the mechanics of this joint is a fundamental part of studying the anatomy of the neck and head.

137. (C) The application of mechanical principles to the study of living organisms.
This interdisciplinary field uses the laws of physics and engineering to analyze the movement and structure of biological systems. It examines how forces interact with the body and the resulting motion of limbs and equipment. By providing a mathematical framework for understanding physical activity, it helps in optimizing athletic performance, designing better safety gear, and developing effective rehabilitation methods. This comprehensive approach is essential for any scientific study of human or animal movement in various environments and activities.

138. (A) Newton's First Law
The fundamental principle regarding the state of motion declares that an object will not change its current velocity unless an external force acts upon it. This means that stationary objects stay still and moving objects keep moving at a constant speed in a straight line. In sports, this explains why an athlete must apply force to start moving or change direction. This concept of resistance to change is a cornerstone of biomechanics, providing the basis for understanding all physical interactions and movement.

139. (A) 1 and 4 only
Gravitational acceleration is a constant downward force that acts equally on all objects, regardless of their weight, provided air resistance is negligible. This means two objects released from the same height will fall at the same rate. However, the upward speed of a projectile is actually zero at its highest point, not maximum. Understanding these fundamental laws is essential for accurately predicting the flight of implements and the movement of athletes during the airborne phase of various sporting activities and skills.

140. (B) Speed
In the study of motion, some measurements only track the size or magnitude of a value without considering its direction. This simple rate of movement describes how fast an object is going but does not specify its orientation. This is distinct from other quantities that require both a numerical value and a directional component to be fully described. Recognizing these differences is essential for accurate data collection and for understanding the fundamental physical properties of movement in various athletic and scientific contexts.

141. (C) Elasticity
This physical property describes the ability of a material to recover its original dimensions after a deforming force has been removed. In sports, this is highly visible in the behavior of balls, rackets, and athletic surfaces. High levels of this property allow for efficient energy return during impacts, such as a ball bouncing off a court. Understanding this concept is vital for designing high-performance equipment and for studying how human tissues like tendons store and release energy during repetitive activities.

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187. (D) Moment of inertia
This property describes how difficult it is to change the rotational state of a body. It depends on both the total weight of the object and how that mass is positioned relative to the center of rotation. Moving mass further from the axis makes it harder to spin, while pulling it in makes it easier. Understanding this concept is vital for athletes in rotational sports like gymnastics and diving, as it allows them to control their spinning speed through simple body adjustments during performance.

188. (B) Kyphosis
Specific physical movements that involve opening the chest and extending the spine can help counteract an exaggerated upper back curve. By lengthening the front of the body and engaging the back muscles, these techniques encourage a more upright and neutral alignment. This approach is commonly used to improve posture and reduce the rounded appearance associated with long-term slouching or muscle imbalances. Consistency in these corrective exercises is essential for maintaining spinal health and improving overall structural balance and integrity.

189. (C) The description of movement in terms of joints, muscles, and planes/axes.
This type of evaluation focuses on identifying the specific anatomical components involved in a physical activity. It maps the movement to anatomical planes and axes and identifies which muscles are acting as prime movers or stabilizers. By linking structural knowledge to functional performance, it provides a comprehensive picture of how the body achieves a specific skill. This qualitative approach is a foundational step in movement science, essential for optimizing technique and designing effective training and rehabilitation programs and strategies.

190. (D) Swing of the arms and the uncocking of the wrists.
A complex sporting skill often involves a chain of linked rotations that build upon each other to generate maximum speed at the end of the tool. In this case, the movement begins with a large arc created by the arms, which is then supplemented by a secondary rotation at the hands. This sequence of two connected pivots allows for a much greater terminal speed than a single rotation could achieve. Analyzing this multi-link system is essential for understanding the mechanics of high-power swinging actions.

191. (A) Scapula (Shoulder girdle)
These specific directional movements involve raising and lowering the large, flat bone located on the back of the torso. These actions are essential for various overhead movements and for maintaining proper shoulder posture. This skeletal structure is highly mobile, allowing for a wide range of positions that support the function of the arms. Understanding these movements is vital for analyzing upper body mechanics, diagnosing shoulder issues, and ensuring effective technique in sports that require significant shoulder mobility and stability.

192. (B) In a successful high jump, the athlete's center of gravity may pass under the bar.
The balance point of a human body is not a fixed internal location but a dynamic point that shifts as the body changes shape. In some complex athletic positions, this point can even be located in the empty space outside the torso. By arching the body, an athlete can clear a bar even when their total mass's balance point travels a lower path. This counterintuitive mechanical reality is the key to efficiency in high-level vertical jumping and other complex movements that involve aerial maneuvers.

193. (B) Propulsion and body stabilization.
The movement of the legs in the water serves two critical mechanical roles in locomotion. It generates a portion of the forward-pushing force while also helping the athlete maintain a horizontal and efficient body position. Without this rhythmic action, the lower body would sink, creating significantly more resistance and reducing overall speed. Analyzing the timing and geometry of these leg movements is essential for improving swimming technique and ensuring that the athlete moves through the water with maximum efficiency and minimal drag.

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194. (A) The Law of Conservation of Energy
The fundamental principles of motion are a specific set of three rules that describe how forces interact with objects. These rules cover the concept of resistance to change, the relationship

the limbs during repetitive movements like walking or lifting. Identifying these joints is a fundamental part of studying human anatomy and understanding the mechanical constraints of various joints in the human body during physical activities and sports.

180. (D) Sports coaching
The practical use of movement science to refine technique and enhance performance is a primary responsibility for professionals who train athletes. By applying the laws of physics and anatomy to individual skills, they can identify technical errors and provide feedback that helps athletes move more efficiently and safely. This systematic approach is essential for achieving elite levels of performance while minimizing the risk of injury. Integrating biomechanical principles into regular training is a hallmark of modern, data-driven athletic development programs and strategies.

181. (C) Mediolateral
Movements that occur within the plane splitting the body into left and right halves, such as bending forward or straightening a limb, always rotate around a side-to-side line. This spatial relationship is a core concept in biomechanics. Proper identification of this axis is essential for a precise anatomical and mechanical description of joint actions. By linking planes to their correct axes, researchers can accurately model human motion and provide clear, technically accurate instructions for improving athletic performance and overall movement quality.

182. (B) 1, 2, and 3 only
Muscular systems are defined by two primary attachment points, with the one closer to the body's center typically remaining stationary during contraction. The further point is the one that moves, being pulled toward the stable end as the muscle fibers shorten. However, the tough tissues that connect these muscles to the bones are technically distinct from the fibrous bands that connect bones to other bones. Understanding these specific roles and connections is a foundational requirement for any student of human anatomy and movement science.

183. (D) Increase by 20%
According to the fundamental laws relating force and motion, the rate at which an object changes its speed is directly proportional to the amount of force applied. If the weight of the object stays the same, any increase in the intensity of the push or pull will result in an identical increase in the resulting rate of acceleration. This linear relationship is a core principle of biomechanics used to predict and measure the effectiveness of an athlete's physical effort in various sports.

184. (A) Pass under the bar while the body clears it.
Modern vertical jumping techniques involve an arched body position that allows the athlete to clear a high bar more efficiently. By manipulating their shape in the air, the performer can ensure that their torso passes over the obstacle while their balance point travels along a path that remains at or below the level of the bar. This mechanical advantage allows for clearing greater heights with the same amount of power. Mastery of this technique is a defining characteristic of high-level performance in the event.

185. (A) Both A and R are true and R is the correct explanation of A.
Most limb movements in the human body are powered by a system that prioritizes speed and range of motion over raw lifting force. In this arrangement, the muscle pulls on the bone very close to the joint, requiring it to generate significantly more tension than the actual weight being lifted. This trade-off allows the hand to move extremely fast through a large arc. Understanding this mechanical priority is essential for analyzing why the human body is built for agile and rapid movement rather than maximum power.

186. (A) Force
This specific measurement represents the primary cause of linear motion, acting as the push or pull that changes an object's state of movement. In biomechanics, it is the fundamental quantity studied in the branch that examines the underlying causes of motion rather than just describing the path taken. By measuring the intensity of this interaction, researchers can quantify the physical effort required for various athletic tasks. This value is distinct from descriptive measures like speed or the path of the body.

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202. (A) Right and left sections
This vertical anatomical divider splits the body directly down the middle, creating two symmetrical halves. Most joint actions involving forward and backward movements, such as bending or straightening, occur within this plane. Recognizing this boundary is essential for describing movement patterns and for professional communication in anatomy and sports science. By using this standard reference, practitioners can accurately map the orientation of limbs and the direction of movement during various athletic performances and physical assessments of the human body.

203. (D) The thumb (carpometacarpal joint)
This specialized skeletal connection features two surfaces that are shaped like a rider and their seat, allowing for a wide range of motion in multiple directions. It is a unique articulation that provides the hand with its incredible dexterity and precision. This structure enables the complex movements needed for a strong and versatile grip. Identifying this joint is essential for understanding the mechanical capabilities of the hand and for developing specialized rehabilitation protocols for injuries that affect fine motor control and hand function.

204. (B) Shoulder flexion, adduction, and internal rotation.
The large chest muscle is responsible for pulling the arm forward, bringing it across the body, and spinning it inward toward the midline. Because of its broad attachment on the collarbone and sternum, and its moving attachment on the upper arm bone, it is a primary driver for many upper body actions. This muscle is essential for pushing movements, swimming, and various throwing skills. Strengthening this group is a common focus for improving upper body power and stability in many sports.

205. (C) They will travel the same distance.
In the absence of atmospheric resistance, the horizontal distance traveled by a launched object depends only on its initial speed and the angle of release. The weight of the implement has no direct effect on the trajectory or the resulting range. Two objects thrown with identical starting parameters will follow the exact same path and land at the same spot. This theoretical principle illustrates the fundamental physics of projectile motion, although real-world conditions like air resistance will eventually cause differences between diverse objects.

206. (A) Both Statement I and Statement II are true.
The total quantity of rotational motion in a body is calculated by its weight distribution and its spinning speed. This value remains constant unless an external turning force is applied to the system. This principle allows athletes to manipulate their rotational speed by simply changing their body shape. By understanding this conservation law, performers like divers and gymnasts can precisely control their technical execution mid-air. This fundamental concept is a cornerstone of rotational biomechanics and the study of complex aerial athletic skills.

207. (A) Perfectly elastic collision
In an ideal physical interaction where objects bounce apart, no movement energy is lost to deformation or heat. The relative speed at which the objects move apart is identical to the speed at which they approached each other. While such perfect efficiency is a theoretical concept, high-performance sports equipment is designed to get as close to this value as possible to maximize energy return. Understanding these efficient impacts is essential for analyzing the performance of balls and rackets in various competitive sporting environments.

208. (B) It can be First or Second class depending on the reference.
The mechanical classification of this rowing tool depends on which point is viewed as the stationary pivot. If the water is considered the fixed point, the tool functions as one type of lever. If the connection to the boat is seen as the pivot, it functions as another. This ambiguity highlights the importance of clearly defining the components of a mechanical system during a biomechanical analysis. Recognizing these different perspectives is essential for understanding the efficiency and mechanics of propulsion in water-based sports.

209. (B) Strengthen the intrinsic muscles of the foot to support the arch.
Addressing a collapsed foot arch requires focused exercises that activate the small muscles responsible for maintaining the bridge of the

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foot. By performing tasks that involve curling the toes or shifting weight, individuals can improve the structural integrity of the area. This approach helps the foot act as a functional shock absorber, reducing the risk of secondary pain in the ankles, knees, and lower back. Consistency in these movements is a standard part of physical therapy for improving foot health and function.

210. (A) Velocity (speed and direction) at takeoff.
The total horizontal distance achieved in a long jump is primarily determined by the speed and angle at which the athlete leaves the ground. While mid-air movements help with balance and landing preparation, they cannot significantly alter the path of the body's balance point once flight has begun. Maximizing the initial velocity through an explosive takeoff is the most critical technical requirement for success in the event. Biomechanical analysis focuses on optimizing these takeoff parameters to achieve the greatest possible jump distance.

211. (C) Contraction
While many terms describe the resulting movement of joints, such as bending, spinning, or shifting, one term specifically refers to the internal process where muscle fibers generate tension. This internal action is the cause of motion, not a description of the joint's path itself. Differentiating between the muscular cause and the skeletal effect is essential for accurate anatomical and kinesiological descriptions. Mastery of these distinct categories ensures that movement analysis is both scientifically precise and professionally communicated in various sports and medical contexts.

212. (D) Second class only
Mechanical efficiency is measured by comparing the distance from the pivot to the force against the distance from the pivot to the load. In one specific arrangement, the force is always further from the pivot than the load, ensuring that it is always easier to lift the resistance. This setup provides a constant advantage for raw power. Other configurations are more versatile or are specialized for speed. Recognizing this high-leverage arrangement is essential for understanding both human movements and the mechanical principles of various tools and machines.

213. (C) Increase friction to provide better grip.
Specialized athletic footwear with metal pins is designed to dig into the track surface, creating a strong mechanical bond. This increased resistance prevents the foot from slipping during explosive movements and high-speed turns. By maximizing the traction, athletes can transfer more of their muscular force into forward propulsion. This focus on surface interaction is a critical part of sports equipment design, ensuring that runners can maintain their speed and stability in various environmental conditions and on different track surfaces.

214. (B) Safely decelerating the limbs and preventing injury.
Continuing the movement after an object has been released or struck is essential for gradually reducing the high speeds of the limbs. Abruptly stopping a high-velocity action can place excessive stress on the joints and soft tissues, leading to serious injury. This phase allows the athlete to absorb the momentum over a longer period, protecting the body from the physical costs of repetitive explosive movements. Proper execution of this phase is a hallmark of good technique across all throwing, kicking, and striking sports.

215. (A) Both A and R are true and R is the correct explanation of A.
Athletes in high-velocity sports often adopt a compact and narrow profile to minimize the amount of air or water they must push through. This postural change reduces the pressure difference between the front and back of the performer, which is a major source of resistance. By minimizing this backward-pulling force, they can maintain higher speeds with less physical effort. This aerodynamic and hydrodynamic strategy is a fundamental part of elite performance in swimming, cycling, and other sports involving high-speed movement through fluid.

216. (A) Muscular power
A vertical leap test measures the ability of the lower body muscles to generate a high amount of force extremely quickly. It is not just a measure of strength, but of how fast that strength can be applied. This explosive capability is a key requirement for success in many sports, including basketball, volleyball,

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and track and field. Analyzing this jump height provides researchers and coaches with a reliable indicator of an athlete's physical explosiveness and their potential for high-performance athletic movements and actions.

217. (C) Fulcrum
Every mechanical system that produces rotational motion requires a fixed point around which the tilting or spinning occurs. In the human body, the joints serve as these central references for the movements generated by muscular force. The location of this pivot point relative to the force and the load dictates the mechanical properties of the lever. Correctly identifying this component is essential for analyzing the efficiency of skeletal arrangements and for a precise description of how the body functions as a complex series of machines.

218. (A) The stance phase and the swing phase.
The complete cycle of human walking is divided into two distinct parts based on whether the foot is in contact with the ground or moving through the air. One part involves the limb providing support and propulsion, while the other involves the limb preparing for the next step. Analyzing these alternating periods is the foundation of gait analysis. It allows practitioners to identify inefficiencies, imbalances, or abnormalities that could lead to injury or reduced movement efficiency during regular locomotion and specialized athletic activities.

219. (D) Kinematics and kinetics
The study of physical movement is split into two complementary branches. One focuses on the descriptive patterns of motion, such as speed and timing, while the other examines the underlying forces and masses that cause those patterns to occur. Combining these two perspectives provides a complete scientific picture of how an athlete moves and why. This comprehensive approach is essential for any modern biomechanical analysis aimed at optimizing performance, improving safety, and developing a deeper understanding of the mechanics of human and animal motion.

220. (A) 1, 2, 3 and 4
A successful golf swing is a complex movement that primarily involves rotating around a vertical axis. It utilizes a sequence of muscular actions from the ground up to generate high speed at the end of the club. Generally, a longer implement provides the potential for greater terminal velocity. Additionally, the pressure of the grip is a significant factor in controlling the movement. Recognizing these mechanical principles is essential for mastering the skill and for providing effective technical feedback to golfers at all skill levels.

221. (C) Lordosis
This postural condition is marked by an excessive inward curve in the lower part of the spine, often causing the back to appear hollow. It is frequently associated with weak core muscles and tight hip flexors. While some bend in this area is natural, an exaggerated curve can lead to chronic lower back discomfort and structural instability. Corrective measures typically focus on strengthening the abdominal and gluteal regions while improving flexibility in the front of the hips to encourage a more balanced pelvic alignment.

222. (D) The study of objects undergoing acceleration.
This branch of mechanics focuses on systems where the state of motion is actively changing. It examines the relationship between unbalanced forces and the resulting speed increases or decreases of a mass. This is distinct from the study of systems in balance. This perspective is vital for analyzing explosive sporting actions like sprinting, jumping, and striking, where the ability to rapidly change velocity is a key performance indicator. Mastery of this field is essential for understanding the high-power physics of athletic maneuvers.

223. (A) Mediolateral axis
This complex aerial maneuver involves a forward or backward rotation within the sagittal plane. Because the body is spinning in a way that the head and feet move through a vertical circle, the rotation occurs around an imaginary horizontal line that runs from side to side. Understanding this axial relationship is essential for gymnasts and divers to maintain proper alignment and control during the skill. Correct mapping of movements to their axes is a foundational requirement for accurate biomechanical analysis of all rotational athletic maneuvers.

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explosive force needed for walking and running. Understanding the relationship between these two muscles is essential for analyzing lower body mechanics and for designing effective strength and rehabilitation programs for the ankle and foot.

239. (A) Both A and R are true and R is the correct explanation of A.
In an ideal environment without air resistance, the rate at which an object falls toward the Earth is constant and does not depend on its weight. This means that two objects of different masses released from the same height will accelerate at the same speed and strike the ground at the same time. This fundamental law of gravity is a cornerstone of physics and is used in biomechanics to accurately predict the behavior of falling bodies. Understanding this principle is essential for a scientific study of motion and trajectory.

240. (B) Angular velocity
The rate at which an object changes its spinning speed is a fundamental measure in rotational mechanics. It describes how quickly the rate of angular change is increasing or decreasing over a specific period. This value is the rotational equivalent of linear acceleration. Calculating this measure is essential for analyzing the technical execution of skills that involve spinning, such as those in gymnastics and diving. It allows researchers to quantify the intensity of a rotational change and its effect on the overall athletic performance.

241. (B) To increase the coefficient of friction.
Applying a specific powder to the hands helps absorb moisture and improves the quality of the contact between the athlete and the equipment. This increase in grip prevents slipping, which is essential for safety and performance in technical sports like gymnastics. By creating a more stable and predictable interaction, athletes can perform complex maneuvers with greater confidence and control. This use of material science to optimize surface interaction is a standard practice in many sports where maintaining a secure hold is a critical requirement.

242. (B) P-3, Q-4, R-1, S-2
Mechanical systems in the human body are categorized into three classes based on the relative positions of the pivot, the force, and the load. Common examples include the balancing of the head, the lifting of the heels, and the rapid bending of the elbow. Each arrangement provides different mechanical properties that are suited for various types of movement, from stability and force multiplication to high speed and range of motion. Correctly mapping these classes to their human examples is essential for a complete understanding of joint mechanics.

243. (C) Linear Kinetics
This branch of movement science is dedicated to studying the forces that result in straight-line or curved-line locomotion. It looks beneath the descriptive patterns of movement to understand the underlying causes, such as muscular push and the ground's resistance. By calculating the energy and power required for these actions, researchers can gain a deeper understanding of human efficiency and the mechanical demands of running. This quantitative approach is essential for optimizing performance and identifying potential injury risks in various athletic and scientific movement contexts.

244. (D) A flight phase where neither foot is on the ground.
The primary mechanical difference between these two modes of locomotion is the presence of a moment when the body is entirely airborne. While walking always involves at least one foot being in contact with the surface, faster movement includes a rhythmic cycle where the performer briefly loses contact. This change in mechanics requires different muscle recruitment patterns and results in greater impact forces upon landing. Analyzing this airborne period is essential for understanding the physics of high-speed running and for optimizing the efficiency of an athlete's gait.

245. (C) Electrical activity of muscles
Specialized monitoring systems are used to track the signals sent by the nervous system to initiate muscular contraction. This data provides insights into the timing, intensity, and duration of muscle activation during various physical activities. By correlating these signals with movement data

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also assists in bending the knee. Identifying this specific attachment is essential for understanding the complex mechanics of the lower limb and for diagnosing issues related to leg power and mobility.

232. (A) increase; decrease
By moving their limbs further away from the center of rotation, an athlete significantly increases their resistance to spinning. According to the conservation laws of physics, if no external turning force is applied, the total amount of rotational motion must stay the same. This means that as the resistance increases, the speed of rotation must automatically drop to compensate. This principle is used by various performers to control their spinning speed through simple body adjustments, ensuring a more stable and controlled movement during complex maneuvers.

233. (C) Density
Liquid environments are significantly more resistant to movement than gaseous ones because they are much heavier for a given volume. This higher weight means an athlete must displace more matter to move forward, leading to greater resistive forces. In swimming, minimizing this drag is a primary technical goal. Hydrodynamic principles are essential for optimizing body position and equipment design to overcome this significant environmental resistance and achieve higher speeds with less effort. This distinction between air and water is a core concept in fluid mechanics.

234. (A) Between the effort and the resistance.
In this particular mechanical arrangement, the pivot point is located directly between the source of force and the weight being moved. This setup allows for a balancing or tilting action, similar to a seesaw. Depending on the position of the pivot, this system can be used to multiply either the force or the speed of the movement. Recognizing this common configuration is essential for understanding both human movements that involve a balancing action and the mechanical principles of various tools used in sports and daily life.

235. (D) Kyphosis
Specific physical movements that involve arching the upper back and opening the chest are effective for counteracting an excessive outward curve of the spine. By strengthening the posterior muscles and stretching the front of the body, these techniques encourage a more upright and neutral alignment. This approach helps reduce the rounded appearance of the back and can alleviate discomfort caused by poor posture. Consistency in these corrective exercises is a standard part of physical therapy and holistic programs designed to improve overall structural health and integrity.

236. (B) Follow-through phase
The period immediately following the primary application of force is essential for safely decelerating the body and preparing for the next action. Continuing the movement allows for the gradual dissipation of momentum, protecting the joints and soft tissues from the physical costs of an abrupt stop. This phase also helps in maintaining balance and ensuring a smooth transition back to a stable state. Proper execution of this final stage is a hallmark of good technique and is essential for long-term health and performance in explosive sports.

237. (C) It divides the body into anterior and posterior portions.
This anatomical reference is a vertical divider that splits the frame into front and back segments. While side-to-side movements like jumping jacks occur within this plane, it is accurately described as creating front and back halves. It is also known by another name, the coronal plane. Mastery of these directional boundaries is essential for a precise description of human orientation and movement patterns. By using these standard references, practitioners can communicate clearly about spatial positioning and the orientation of limbs during various athletic performances and assessments.

238. (A) Both Statement I and Statement II are true.
The lower leg contains two major muscles on the posterior side that work together to point the foot downward. One muscle is broader and located deeper, while the other is larger and closer to the surface. Both tissues attach to the heel bone through a common tendon and provide the

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athletes interact with the surface to optimize performance and identify potential inefficiencies.

253. (C) Kinesiology has a broader scope, while biomechanics is a specialized application of mechanical principles within it.
Kinesiology serves as a comprehensive discipline covering the broad study of movement, including psychological and physiological aspects. Biomechanics is a specific area of study within this larger framework. It narrows the focus to the application of mechanical laws to the human body, serving as a specialized analytical tool rather than encompassing all aspects of movement science.

254. (D) Global Positioning Systems (GPS).
Contemporary biomechanical analysis relies on specific technologies such as electromyography to track muscle activity and force plates for measuring ground reactions. While high-speed cameras and computer simulations are integral to modern data collection and movement modeling, Global Positioning Systems are not cited as standard tools for the specific biomechanical assessments mentioned in the descriptive text provided for analysis.

255. (C) Enhancing performance by optimizing technique and minimizing injury risk.
The practical application of biomechanical science aims to fulfill two primary goals in sports. First, it seeks to improve the efficiency and mechanical execution of techniques to boost athletic output. Second, it focuses on safety by analyzing and reducing the stress placed on various anatomical structures, which helps in preventing both acute and long-term injuries during performance.

256. (B) The frontal axis.
Anatomical movement occurs within specific planes around corresponding perpendicular axes. The sagittal plane, which bisects the body into left and right halves, facilitates movements such as flexion and extension. These actions take place around a horizontal line passing through the body from side to side, which is formally designated as the frontal axis in standard anatomical terminology.

257. (D) In the transverse plane around a vertical axis.
Rotational movements, such as a figure skater spinning, occur when the body turns around its vertical center. These types of motions are categorized as taking place within the transverse plane, which divides the body into upper and lower sections. The rotation happens specifically around the vertical or longitudinal axis, which runs through the body from top to bottom.

258. (A) An analytical convenience that simplifies a more complex reality.
Simplifying human movement into isolated planes and axes is a useful analytical approach for basic understanding. However, real-world athletic skills usually involve complex, simultaneous motions in various directions. While describing a movement in a single plane is an analytical convenience, it does not fully capture the multi-planar reality of high-level sports techniques and functional human movements.

259. (C) Abduction and adduction.
The frontal plane divides the body into front and back portions. Typical movements occurring in this plane involve side-to-side actions relative to the body's midline. Specific examples include abduction, which is moving a limb away from the center, and adduction, which is moving it toward the center. These movements rotate around an axis running from front to back.

260. (A) They are complex and involve motion in multiple planes simultaneously.
Most athletic performances are characterized by high levels of complexity that exceed simple, single-plane descriptions. Successful execution of sports skills usually requires the integration of movements across different anatomical planes at the same time. This multi-planar nature means that athletes must coordinate various rotational and linear components to perform complex tasks like serving a ball or throwing.

261. (D) It is the mobile attachment point that is pulled toward the origin during contraction.
Muscles are attached to bones at two primary points to facilitate motion. The insertion refers to the specific attachment point that is typically more distant from the body's center and possesses greater mobility. During a muscular contraction, the shortening of the fibers pulls this mobile distal

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from other sources, researchers can develop a comprehensive picture of how the body achieves a specific skill. This quantitative approach is a standard tool in modern sports science for optimizing technique, identifying imbalances, and developing highly effective training and rehabilitation programs and strategies.

246. (B) Shoulder joint (Ball-and-socket)
This skeletal articulation allows for the most extensive range of movement in the entire body, enabling the arm to move in almost any direction. Its multi-axial design permits bending, spinning, side-to-side shifting, and circular paths. While this incredible mobility is essential for overhead sports and daily tasks, it also makes the structure more susceptible to injury. Understanding the mechanical capabilities and limitations of this joint is a fundamental part of studying human anatomy and ensuring proper technical form in various high-mobility sporting activities and skills.

247. (D) Agonists
During this specific exercise, several major muscle groups work together to drive the upward movement by shortening under tension. These primary movers are responsible for generating the majority of the force needed to overcome gravity and lift the body. Identifying these roles is essential for a kinesiological analysis of the exercise and for designing strength training programs that effectively target specific areas of the body. Understanding the coordination of these muscles is a foundational requirement for students of human anatomy and movement science in sports.

248. (A) 30 degrees
In the absence of atmospheric resistance, an object launched at a certain angle will travel the same horizontal distance as an object launched at the angle that completes a ninety-degree total. These complementary angles share the same landing spot because of the mathematical symmetry of the flight path. Recognizing this relationship allows athletes to adjust their strategy while still achieving the desired range. This theoretical principle is a core part of projectile motion physics, used to understand and predict the behavior of various sporting implements and projectiles.

249. (C) A third-class lever always provides a mechanical advantage greater than 1.
The most common mechanical arrangement in the limbs is specialized for high speed and a broad range of motion rather than multiplying force. In this system, the distance from the pivot to the force is always shorter than the distance to the load, meaning the muscle must work harder than the weight being moved. While this requires more effort, it is perfectly suited for the rapid movements needed in sports. Understanding this mechanical trade-off is essential for analyzing human anatomy and why the body prioritizes agility over power.

250. (A) 1, 2, 3 and 4
Comprehensive evaluations of fundamental movements combine descriptive studies of patterns with quantitative analyses of the underlying forces. These studies identify active muscle groups, measure physical parameters like speed and acceleration, and look at both linear and rotational components of the skill. The primary goal is to enhance performance and reduce structural injury risks. However, these complex actions rarely occur in only a single plane. Recognizing these multiple dimensions is essential for a scientific and professional analysis of human movement across all types of athletic activity.

251. (B) To apply mechanical and physical laws to understand human performance.
Biomechanics operates as a specialized branch of kinesiology that utilizes principles from physics and mechanics. It focuses on how these laws influence human movement and athletic performance. By studying these mechanical aspects, researchers and practitioners can better understand the factors contributing to success in sports and develop strategies to minimize injury risks throughout various athletic activities.

252. (A) A modern trend in biomechanics for measuring ground reaction forces.
Modern technological advancements in the field of biomechanics have introduced various tools for detailed movement assessment. Force plates are a prominent example, specifically designed to quantify the ground reaction forces generated during dynamic actions such as jumping. These tools allow sports scientists to analyze how

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more momentum to cover greater ground before gravity and air resistance bring it to the surface.

272. (B) Less than 45 degrees.
The ideal angle for launching a projectile changes based on the relative heights of the starting and ending points. When an object like a shot put is released from above the ground, it spends more time in the air during its descent. Consequently, a release angle slightly lower than the theoretical forty-five-degree maximum is more efficient for achieving the greatest distance.

273. (D) An object in flight that is subject to gravity and air resistance.
In the study of mechanics, an object is classified as a projectile once it has been launched into the air and is no longer being powered by an internal or external engine. During its flight, the only significant external forces acting upon its trajectory are the downward pull of gravity and the resistive force generated by the surrounding air.

274. (A) Increases the projectile's total flight time.
Launching an object from a higher point relative to the landing area provides a distinct mechanical advantage. It extends the duration that the object remains in the air before hitting the ground. This increased flight time allows the projectile's horizontal velocity to act for a longer period, which generally leads to a further total distance traveled from release.

275. (C) The speed, angle, and height of projection.
Successful performance in sports involving projectiles requires the precise coordination of three main variables. An athlete must determine the correct velocity, select the appropriate launch angle, and account for the height from which the object is released. Controlling this specific combination of factors allows the athlete to accurately predict and manage the flight path of the ball.

276. (A) What was the rotational velocity of the figure skater's spin?
Kinematics is the branch of biomechanics that focuses on the descriptive aspects of motion. It examines parameters like displacement, velocity, and acceleration without investigating the forces involved. Measuring the rotational velocity of a figure skater's spin is a kinematic evaluation because it describes the speed and nature of the movement itself rather than the internal or external forces causing it.

277. (D) Kinetics.
When a biomechanical study focuses on the forces that produce or change movement, it is categorized as a kinetic analysis. Investigating the specific forces generated by a swimmer's hands against the water involves looking at the underlying causes of propulsion. Unlike kinematics, which merely describes the movement, kinetics explains the interaction of forces that result in that motion.

278. (B) Kinematics describes motion, while kinetics explains the causes of motion.
The primary difference between these two branches of mechanics lies in their focus. Kinematics is purely descriptive, providing data on the geometry and timing of motion such as speed and position. Kinetics, however, is explanatory, focusing on the forces and torques that initiate or alter that motion. Together, they provide a comprehensive understanding of how and why movement occurs.

279. (C) The rotation of a gymnast's body.
Movement description is divided into linear and angular categories. Angular kinematics specifically deals with objects rotating around a fixed or moving axis. Measuring the rotation of a gymnast's body during a skill like a somersault is an example of an angular kinematic variable. It focuses on the descriptive measurement of the turning motion rather than the causes of rotation.

280. (D) Both a kinematic description of the movement and a kinetic analysis of the forces causing it.
A thorough biomechanical evaluation of a complex athletic skill, such as a tennis serve, requires a multi-faceted approach. To understand the skill completely, one must describe the visible motion, such as the path and speed of the racket, using kinematics. Simultaneously, a kinetic analysis is necessary to evaluate the internal muscular forces and torques that generate those specific movements.

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point toward the more stable origin, resulting in movement at the joint.

262. (B) Abduction.
Human body movements are categorized based on their direction relative to the anatomical midline. Lifting a limb sideways and away from the center of the body is a fundamental motion. This specific action, often performed during exercises like lateral raises for the shoulders, is defined as abduction. It involves moving the bone away from the body's central vertical axis.

263. (C) The joint.
The biomechanics of human movement can be understood through the principles of mechanical leverage. In this biological system, the bones function as the rigid bars or levers. The joints where the bones meet act as the stationary pivot points or fulcrums. Muscles provide the necessary force or effort required to overcome resistance and generate movement around these points.

264. (D) The origin is generally the more stable attachment, while the insertion is more mobile.
Muscles connect to the skeleton at two different sites designated as the origin and the insertion. The origin is generally characterized as the more fixed and stable attachment point, often located closer to the torso. In contrast, the insertion is the attachment point on the bone that moves significantly during contraction, typically situated further away from the body's midline.

265. (A) The action and leverage of principal muscles like the quadriceps.
The power and effectiveness of sports movements like kicking are determined by the mechanical interaction between muscles and bones. Specifically, the way muscles exert force across joints depends on leverage. For a kicking motion, the efficiency is dictated by how the primary muscles, such as the quadriceps, apply force to move the leg bones around the knee joint.

266. (B) The Law of Action-Reaction.
Newton's Third Law states that every applied force is met with an equal force in the opposite direction. When a basketball player pushes down against the floor to jump, the floor pushes back upward with the same amount of force. This upward reaction force from the ground is what actually propels the athlete into the air for the rebound.

267. (B) The athlete with the lesser mass will experience greater acceleration.
According to the Law of Acceleration, the rate at which an object changes speed depends on both the applied force and its mass. If the same force is applied to two different objects, the one with less mass will accelerate more rapidly. Therefore, an athlete with lower body mass will experience greater acceleration than a heavier athlete when using identical force.

268. (A) A stationary golf ball that only moves when struck by a club.
The Law of Inertia describes the tendency of objects to resist changes to their current state of motion. A stationary object, such as a golf ball sitting on a tee, will remain perfectly still until an external force is applied by a club. This resistance to starting movement is a classic demonstration of inertia as defined in basic mechanical physics.

269. (C) Apply an external force to it.
To alter the movement of an object that is already in motion, its existing inertia must be overcome. This requires the application of an external force from another source. In a soccer match, for a ball to change its path, a player must physically strike it, as the ball will otherwise continue moving in its original direction and speed.

270. (D) The second law, concerning the relationship between force and acceleration.
Newton's Second Law describes the mathematical relationship between force, mass, and acceleration. It establishes that increasing the force applied to an object will result in a proportional increase in its acceleration. For a shot putter, applying maximum force is a strategic use of this law to ensure the heavy implement reaches the highest possible velocity at the moment of release.

271. (C) The speed of projection.
Several variables influence how far a projectile travels through the air. While the angle and height of release are important, the velocity at which the object is launched is typically the most significant determinant of horizontal distance. Higher initial speeds provide the object with

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224. (B) Subtalar joint of the foot/ankle
These specific movements involve tilting the sole of the foot inward toward the midline or outward away from it. These actions occur at the specialized joints located just below the main ankle articulation. They are essential for maintaining balance on uneven surfaces and for various lateral movements in sports. Understanding these capabilities is vital for analyzing foot and ankle mechanics, diagnosing common injuries like sprains, and ensuring proper technical form in activities that require significant sideways stability and weight shifting during locomotion.

225. (B) A rower's oar pushing against the water to move the boat.
This sporting action perfectly illustrates the principle that every force applied to an object results in an identical force being returned in the opposite direction. When the athlete pushes the tool against the liquid, the liquid pushes back with the same intensity, propelling the craft forward. This reciprocal relationship is the basis for all forms of locomotion where an athlete must interact with their environment. Recognizing these equal and opposite forces is essential for understanding the mechanics of propulsion in various sporting disciplines.

226. (A) Newton-meter (Nm)
The measurement of a turning effect is expressed using a unit that combines the intensity of the force and the length of the lever arm. This combined unit tracks the rotational influence generated when a push or pull is applied at a distance from a pivot. Consistency in using this standard is essential for accurate biomechanical calculations and for comparing the strength requirements of different joint movements. This value is a fundamental tool for researchers studying the mechanical efficiency of human and animal musculoskeletal systems.

227. (C) The impact of a tennis ball on a racket.
This numerical value is used to quantify the efficiency of an impact by comparing the speeds of approach and separation. In sports that involve striking a ball, it measures how much movement energy is retained after the collision. This helps determine the "springiness" of the equipment and the resulting velocity of the ball. Understanding this concept is vital for choosing the right gear and for analyzing the performance of different racket and string combinations in high-level competitive play and technical studies.

228. (A) 4, 3, 1, 2
A complete vertical leap follows a logical progression of stages, starting with a downward squat to store energy and prepare the muscles. This is followed by an explosive upward push that leaves the surface. Once in the air, the body reaches its peak before descending. Finally, the athlete must manage the impact forces upon returning to the ground. Each stage must be executed in the correct order to maximize performance and ensure a safe and stable landing after the vertical movement is complete.

229. (C) To determine the athlete's dietary needs.
Evaluations of physical technique focus on the mechanical parameters of motion, such as forces, angles, and trajectories. They aim to improve the efficiency of the movement and reduce the risk of structural injury. While nutritional intake is vital for overall health and energy, it falls under the separate domain of metabolic science. A purely physical study prioritizes the geometry and physics of the skill to identify technical adjustments that can maximize the output of the performance and ensure safe movement patterns.

230. (B) Dorsiflexion
This joint action involves pulling the top of the foot upward toward the shin, effectively reducing the internal angle between them. It is a fundamental movement for various daily tasks and sporting actions, such as clearing the ground during the swing phase of walking or preparing for a specific landing. This movement is the direct opposite of pointing the toes downward. Understanding this term is essential for anatomical descriptions and for evaluating the range of motion and functional mobility of the ankle joint and lower limb.

231. (D) Femur
The largest and most superficial muscle on the back of the lower leg is unique because its stationary attachment point is located above the knee. Because it crosses both the knee and the ankle joints, it can influence the movement of both the thigh and the foot. This muscle is a primary driver for powerful plantar flexion and

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281. (A) The Magnus effect resulting from spin.
When a ball is hit with topspin, its rotation causes air to move differently around its surfaces. This creates a pressure imbalance known as the Magnus effect. In tennis, this downward force makes the ball dip more rapidly than it would under gravity alone. This physical phenomenon is the primary reason why spinning projectiles follow curved rather than straight paths.

282. (B) To increase the impact time and thereby reduce the peak force felt by the athlete.
Impact mechanics involve high forces acting over very brief durations. Protective gear in contact sports is engineered to be compressible to prolong the time it takes for a collision to occur. By increasing the duration over which the momentum changes, the peak force transmitted to the athlete's body is significantly lowered, reducing the overall risk of injury during impacts.

283. (B) A force that can be either beneficial for traction or detrimental as resistance.
Friction is the force acting between two contacting surfaces to resist their relative motion. In athletic contexts, its role is variable. It provides necessary traction for athletes to move and change direction effectively on various surfaces. However, it can also act as a disadvantageous resistance, which is why athletes in sports like skiing or swimming often attempt to minimize it.

284. (A) Elasticity and the coefficient of restitution.
The term "liveliness" in a sporting context refers to the ability of a ball to bounce back after striking a surface. This property is mathematically represented by the coefficient of restitution, which measures the elasticity of the collision. It indicates how much energy is retained after impact, determining whether a ball will bounce high or lose its momentum quickly.

285. (C) A baseball pitcher throwing a curveball — Utilizing spin.
Many sports techniques are designed to exploit specific physical phenomena to gain a competitive advantage. A baseball pitcher throwing a curveball is a clear example of using spin to manipulate the ball's flight path. The rotation applied to the ball interacts with the air to cause a predictable deviation in its trajectory, illustrating the practical application of spin in sports.

286. (D) To minimize form drag by reducing their cross-sectional area.
As an athlete moves through a fluid like air, they encounter resistance known as drag. Form drag is particularly affected by the shape and size of the frontal area facing the wind. By adopting a crouched or aerodynamic position, a cyclist reduces their cross-sectional profile. This minimizes the air resistance they must overcome, allowing higher speeds with less effort.

287. (C) Lift force.
Lift force is a component of fluid mechanics that acts perpendicular to the direction of motion. For certain athletic implements like a discus, the specific shape and launch angle interact with the air to create an upward force. This lift opposes gravity, allowing the object to remain in the air for an extended period and ultimately travel a greater total distance.

288. (B) Drag acts parallel to the fluid flow, while lift acts perpendicular to it.
Fluid mechanics describes two primary forces acting on a body in motion. Drag is a resistive force that acts parallel to the flow of the fluid, effectively slowing the athlete down. In contrast, lift force acts at a right angle, or perpendicular, to the direction of the fluid flow. This distinction is fundamental to understanding how athletes navigate through air or water.

289. (D) To reduce the resistive effects of drag by following another rider.
Drafting is a tactical maneuver used in high-speed sports like cycling or long-distance running. By following closely behind another competitor, an athlete enters a zone of disturbed air where the resistance is significantly lower. This reduction in drag allows the trailing athlete to expend less energy to maintain the same speed as the leader, effectively preserving their stamina.

290. (A) Form drag.
In fluid dynamics, the shape and orientation of a moving body primarily influence form drag. Unlike surface drag, which depends on the texture and friction of the outer layer, form drag is highly sensitive to the athlete's posture.

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Changing one's body position to create a more streamlined profile is a direct method of reducing this specific type of resistive fluid force.

291. (C) Third-class lever.
Most of the movements produced by the human musculoskeletal system utilize third-class levers. In this arrangement, the muscle's effort is applied between the joint and the weight being moved. While this requires more muscular force than the actual load, it allows for high-velocity movements and a large range of motion, which are essential for various sports and functional activities.

292. (A) Second-class lever.
A calf raise is a functional example of a second-class lever within the human body. During this movement, the ball of the foot acts as the fulcrum, the weight of the body serves as the resistance in the middle, and the calf muscles provide the upward effort. This specific mechanical configuration is highly efficient for lifting and supporting heavy loads.

293. (D) It always provides a mechanical advantage in terms of force.
The defining feature of a second-class lever is the placement of the resistance between the pivot point and the force application site. Because the effort arm is always longer than the resistance arm in this setup, the lever consistently provides a mechanical advantage. This means that a smaller amount of muscular effort can move a much larger resistance.

294. (B) Bone and Joint.
The mechanical framework of the human body operates through a series of lever systems. The bones act as the rigid structures, or levers, that are moved to perform work. The joints where these bones connect serve as the stationary points of rotation, known as fulcrums. Muscles then provide the necessary tension to initiate movement of the bones.

295. (C) The muscle force required is greater than the load being moved.
Operating at a mechanical disadvantage means that the effort arm is shorter than the resistance arm. In the context of third-class levers, which are common in the body, the muscle must generate a force that is significantly greater than the weight of the object being moved. However, this trade-off is made to gain benefits in movement speed and range.

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296. (D) To restore musculoskeletal balance by stretching tight muscles and strengthening weak ones.
Postural deformities are often caused by imbalances where some muscles are overly tight while others are weak. Corrective exercise programs are specifically designed to address these discrepancies. By systematically stretching the shortened, tight muscles and strengthening the elongated, weak muscles, these exercises aim to return the body's supporting structures to a balanced and healthy alignment with minimal stress.

297. (A) Lordosis.
Lordosis is a postural condition characterized by an abnormal inward curve of the lumbar region of the spine. This often leads to a visible "swayback" appearance. It can be caused by muscle imbalances, such as tight hip flexors or weak abdominal muscles, which pull the pelvis forward and increase the arch in the lower back beyond its healthy range.

298. (B) Kinesiological analysis focuses on muscles and joints, while mechanical analysis focuses on forces and leverage.
These two analytical methods offer different perspectives on human movement. Kinesiological analysis is primarily biological, identifying the muscles and joints involved in an action. Mechanical analysis, however, applies physics to study the forces, torques, and leverage involved in performance. Using both allows for a comprehensive understanding of how biological systems interact with physical laws during complex athletic skills.

299. (B) Minimal stress on supporting structures.
From a biomechanical perspective, good posture is defined by the efficient alignment of the body's segments. This balance ensures that the pull of gravity and the weight of the body are distributed evenly across the skeletal system. Consequently, this alignment minimizes the amount of unnecessary stress and strain placed on the muscles, ligaments, and joints during rest.

300. (A) A kinesiological analysis.

When a coach or therapist identifies the specific muscle groups and joint actions required to perform a sports technique like swimming, they are conducting a kinesiological analysis. This type of assessment focuses on the anatomical and physiological components of the movement. It helps in understanding the internal requirements of the skill, which is essential for training and injury prevention.

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16. A badminton player learning to play tennis finds that her wrist snap from badminton is interfering with her ability to hit a proper tennis groundstroke. What type of transfer of training is this an example of?
(A) Positive Transfer
(B) Negative Transfer
(C) Zero Transfer
(D) Bilateral Transfer

17. A basketball player is feeling overwhelmed before a championship game. To manage this, she focuses on her breathing, takes a few deep breaths, and tells herself, "I am prepared for this moment." This is a competency-based example of an athlete using which psychological skill?
(A) Aggression management
(B) Stress and anxiety regulation
(C) Self-confidence boasting
(D) Attentional distraction

18. Which of the following is an incorrect statement regarding the measurement of personality in sports?
(A) Personality tests can predict athletic success with perfect accuracy.
(B) Both state and trait measures are used to understand an athlete's personality.
(C) Ethical considerations, such as confidentiality, are crucial when administering personality tests.
(D) Projective tests, like the Rorschach test, are one method used, although less common in sports.

19. For a quarterback in American football who needs to be aware of the defensive formation, the routes of his receivers, and the pressure from oncoming linemen simultaneously, which dimension of attentional concentration is most appropriate?
(A) Broad-internal
(B) Narrow-external
(C) Broad-external
(D) Narrow-internal

20. Consider the following statements regarding group dynamics in sports:
P. A group is defined as two or more people who interact and exert mutual influence on each other.
Q. Formal roles in a team are dictated by the nature and structure of the organization (e.g., captain, coach).
R. Group norms are levels of performance or patterns of behavior that are formally written in a team contract.
S. Social loafing refers to the phenomenon where individuals put forth less than 100% effort due to loss of motivation.
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, R, and S only
(C) P, Q, and S only
(D) P, R, and S only

21. What is the definition of instrumental aggression in a sports context?
(A) Aggression with the primary goal of inflicting physical or psychological harm.
(B) An emotional outburst directed at a game official or coaching staff member.
(C) Aggressive behavior used as a means to achieve a non-aggressive goal.
(D) Unintentional harm caused to an opponent during the normal course of play.

22. A coach tells a young swimmer to improve her time by "one second in the next month," to "focus on a higher elbow during the pull phase," and to "log her practice times after every session." This is an application of which goal-setting principle?
(A) The Vague Intention principle
(B) The SMART principle (Specific, Measurable, Achievable, Relevant, Time-bound)
(C) The Outcome-Only principle
(D) The Performance-Inhibition principle

23. Read the following statements and choose the correct option:
Statement I : Motivation in sports is a static, unchanging trait within an athlete.
Statement II : The dynamics of motivation involve the interaction between personal factors (personality, needs) and situational factors (coaching style, environment).
(A) Statement I is correct, but Statement II is incorrect.
(B) Statement II is correct, but Statement I is incorrect.
(C) Both Statement I and Statement II are

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9. Which of the following statements about anxiety's effect on sports performance is incorrect?
(A) Anxiety has both a cognitive component (worry) and a somatic component (physiological arousal).
(B) An optimal level of arousal/anxiety can facilitate peak performance.
(C) High levels of anxiety are always detrimental to performance.
(D) The interpretation of anxiety symptoms (as either facilitative or debilitative) can affect performance.

10. Read the following assertion and reason and choose the correct option:
Assertion (A) : Intrinsic motivation is generally considered more desirable and sustainable for long-term participation in sports than extrinsic motivation.
Reason (R) : Intrinsically motivated behaviors are performed for satisfaction, leading to greater autonomy and persistence.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

11. What is the definition of group cohesion?
(A) The level of talent among individual members of a team.
(B) The formal structure and hierarchy of a sports organization.
(C) The competition and rivalry that exists between team members.
(D) The tendency for a group to stay united to achieve common goals.

12. According to social facilitation theory, the presence of spectators is likely to have what cause-and-effect relationship on an athlete performing a simple, well-learned skill?
(A) Cause: Presence of spectators; Effect: Impaired performance.
(B) Cause: Presence of spectators; Effect: Enhanced performance.
(C) Cause: Presence of spectators; Effect: No change in performance.
(D) Cause: Presence of spectators; Effect: Decreased motivation.

13. Identify the correct pair related to types of anxiety in sports.
(A) Trait Anxiety : A temporary, ever-changing mood state
(B) Somatic Anxiety : Thoughts of worry and apprehension
(C) Cognitive Anxiety : Negative thoughts and concentration disruption
(D) State Anxiety : A stable part of one's personality

14. Read the following statements and choose the correct option:
Statement I : Internal imagery involves imagining the execution of a skill from your own vantage point, as if you were performing it.
Statement II : External imagery involves viewing yourself from the perspective of an outside observer, as if watching a video of yourself.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both Statement I and Statement II are correct.
(D) Neither Statement I nor Statement II is correct.

15. Match the following psychological skill training techniques in List I with their descriptions in List II:
List I :(Technique)
P. Progressive Muscle Relaxation
Q. Autogenic Training
R. Biofeedback
S. Imagery
List II :(Description)
1. Using electronic instruments to monitor and control physiological processes.
2. Creating or re-creating an experience in the mind.
3. A series of exercises that produce sensations of warmth and heaviness.
4. Systematically tensing and relaxing specific muscle groups.
Codes:
(A) P-4, Q-3, R-1, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-1, R-3, S-2
(D) P-2, Q-3, R-4, S-1

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49. Identify the incorrect pair.
(A) Hostile Aggression : Goal is to harm
(B) Self-Confidence : A stable and unchangeable personality trait
(C) Instrumental Aggression : Goal is to win
(D) Anxiety : A blend of physiological and psychological activity

50. Which theory of personality would be most interested in an athlete's unconscious conflicts and early childhood experiences?
(A) Psychodynamic Theory
(B) Trait Theory
(C) Humanistic Theory
(D) Situational Approach

51. What term describes the scientific study of the psychological factors that are associated with participation and performance in sport, exercise, and other types of physical activity?
(A) Sports Sociology
(B) Sports Biomechanics
(C) Sports Psychology
(D) Sports Medicine

52. Read the following statements and choose the correct option:
Statement I : The presence of a supportive crowd always enhances an athlete's performance, regardless of the task's complexity.
Statement II : The 'home advantage' phenomenon suggests that teams tend to win more often when playing at their home venue, partly due to crowd support.
(A) Both statements are correct.
(B) Only statement I is correct.
(C) Only statement II is correct.
(D) Both statements are incorrect.

53. A coach who provides rewards for good performance and punishment for poor performance is primarily using which motivational dynamic?
(A) Goal setting
(B) Autogenic training
(C) Reinforcement
(D) Psycho-regulation

54. The temporary, ever-changing emotional state of subjective, consciously perceived feelings of apprehension and tension is known as:
(A) Trait anxiety
(B) State anxiety
(C) Self-esteem
(D) Personality

55. Arrange the following in a logical sequence representing a short-term psychological preparation routine on competition day:
P. Arrive at the venue and perform a physical warm-up.
Q. Use a pre-planned imagery or self-talk routine immediately before the start.
R. Wake up and have a nutritious breakfast.
S. Listen to calming or activating music during travel.
Choose the correct sequence:
(A) P, R, S, Q
(B) R, S, P, Q
(C) S, R, P, Q
(D) R, P, S, Q

56. All of the following can negatively affect concentration during sports performance EXCEPT:
(A) Focusing on process-oriented cues
(B) Focusing on past mistakes
(C) Worrying about the outcome of the game
(D) Attending to irrelevant crowd noises

57. A soccer player tackles an opponent forcefully but legally to win the ball. The primary intent is to get the ball, not to injure the opponent. This is an example of:
(A) Hostile aggression
(B) Emotional outburst
(C) Instrumental aggression
(D) Assertive behavior

58. What is the best description of "thinking" as a cognitive process in sports?
(A) The process of using one's mind to consider or reason about game strategy.
(B) The physical reaction to a starting pistol.
(C) The storage and retrieval of past experiences.
(D) An automatic, non-conscious motor program.

59. Identify the correct statement about leadership in sports.
(A) A single leadership style is effective in all situations.

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correct.
(D) Both Statement I and Statement II are incorrect.

24. Identify the correct statement regarding the principles of motor skill learning.
(A) Skills are learned more effectively when the learner understands the goal and mechanics of the movement.
(B) Learning is best achieved through massed practice with no rest intervals.
(C) Feedback is most effective when it is general and infrequent.
(D) The learning process is identical for all individuals, regardless of age or experience.

25. Consider the following statements regarding theories of motivation:
P. Self-Determination Theory suggests that all humans are motivated to satisfy the needs for competence, autonomy, and relatedness.
Q. Achievement Goal Theory differentiates between task (mastery) and ego (outcome) goal orientations.
R. The Inverted-U Hypothesis is a theory of personality, not motivation.
S. Attribution Theory examines how people explain their successes and failures.
T. Reinforcement is a key component of motivation, where positive consequences increase the likelihood of a behavior.
Which of the above statement(s) is/are correct?
(A) P, Q, R, and S only
(B) P, Q, S, and T only
(C) Q, R, S, and T only
(D) P, R, S, and T only

26. A leader who makes decisions independently and expects strict obedience from the team is demonstrating which leadership style?
(A) Autocratic style
(B) Democratic style
(C) Laissez-faire style
(D) Transformational style

27. All of the following are considered psychological skills for activation before a competition, EXCEPT:
(A) Listening to upbeat music
(B) Using positive self-talk and mood words
(C) Engaging in a brisk warm-up
(D) Progressive Muscle Relaxation (PMR)

28. A gymnast is performing on the balance beam. She has practiced the routine hundreds of times and can perform it flawlessly in practice. However, in a major competition with a large audience, she becomes very anxious, overthinks her movements, and falls. This scenario best illustrates:
(A) The positive effects of social facilitation on a well-learned skill.
(B) The negative impact of cognitive state anxiety leading to performance disruption.
(C) A high level of trait anxiety with no state anxiety.
(D) A complete lack of intrinsic motivation.

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29. Identify the incorrect pair regarding the transfer of training.
(A) Positive Transfer : Skills from volleyball helping in learning the tennis serve.
(B) Zero Transfer : Knowledge of swimming having no impact on learning chess.
(C) Negative Transfer : Learning to drive an automatic car making it easier to drive a manual car.
(D) Bilateral Transfer : Practicing a layup with the right hand improving the ability to do it with the left hand.

30. Read the following assertion and reason and choose the correct option:
Assertion (A) : There is no single personality profile that distinguishes athletes from non-athletes.
Reason (R) : The relationship between personality and sport performance is complex, and while some traits may be more common in athletes, situational factors and a wide range of personality types exist across all sports.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

31. In the context of cognitive processes, what does 'memory' primarily refer to?
(A) The process of acquiring, storing, retaining, and later retrieving information.

(B) The ability to concentrate on a single task.
(C) The speed at which an athlete can react to a stimulus.
(D) The emotional state of an individual before a competition.

32. The feeling of nervousness and a racing heart that a player experiences just before a penalty shootout is an example of what?
(A) Trait anxiety
(B) State anxiety
(C) Eustress
(D) Apathy

33. Which psychological skill training technique is designed specifically for relaxation by teaching an individual to feel the difference between tension and non-tension in muscles?
(A) Biofeedback
(B) Progressive Muscle Relaxation (PMR)
(C) Autogenic Training
(D) Goal Setting

34. Read the following statements and choose the correct option:
Statement I : Short-term psychological preparation involves the routines and mental state an athlete adopts in the days and hours immediately preceding a competition.
Statement II : Long-term psychological preparation focuses on building foundational psychological skills like self-confidence and motivation over many months or years.
(A) Statement I is correct, but Statement II is incorrect.
(B) Statement II is correct, but Statement I is incorrect.
(C) Both Statement I and Statement II are correct.
(D) Both Statement I and Statement II are incorrect.

35. Match the following psychological concepts in List I with their best descriptions in List II:
List I :(Concept)
P. Self-Confidence
Q. Concentration
S. Aggression
R. Stress
List II :(Description)
1. The ability to maintain focus on relevant environmental cues.
2. Any form of behavior directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment.
3. A substantial imbalance between demand and response capability, under conditions where failure to meet that demand has important consequences.
4. The belief that one can successfully perform a desired behavior.

Codes:
(A) P-1, Q-4, R-2, S-3
(B) P-4, Q-1, R-3, S-2
(C) P-4, Q-3, R-1, S-2
(D) P-2, Q-1, R-3, S-4

36. Which of the following is NOT typically considered a psychological factor directly affecting sports performance?
(A) Emotions
(B) Anxiety
(C) Concentration
(D) Nutritional habits

37. A coach who focuses on developing mutual respect with the athletes and works to help them reach their full potential, both as athletes and as people, is exhibiting qualities of which leadership approach?
(A) Transactional leadership
(B) Laissez-faire leadership
(C) Transformational leadership
(D) Autocratic leadership

38. The process of using all the senses to create or re-create an experience in the mind is known as:
(A) Goal setting
(B) Mental practice or imagery
(C) Self-talk
(D) Progressive muscle relaxation

39. Which of the following is an incorrect statement about group cohesion?
(A) There are two main dimensions: task cohesion and social cohesion.
(B) Communication and setting team goals can enhance cohesion.
(C) A team can have high task cohesion but low social cohesion.
(D) High group cohesion guarantees team

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success.

40. Consider the following statements regarding goal setting:
P. Process goals focus on the actions an individual must engage in during performance to execute or perform well.
Q. Outcome goals typically focus on a competitive result, such as winning.
R. Setting only outcome goals is the most effective strategy for performance enhancement.
S. "Do your best" goals are more effective than specific, measurable goals.
Which of the above statement(s) is/are correct?
(A) P and Q only
(B) R and S only
(C) P, Q, and R only
(D) Q and S only

41. What is the 'autonomous stage' of motor skill learning characterized by?
(A) High cognitive effort and frequent errors.
(B) The learner beginning to refine the skill and reduce errors.
(C) The performance of the skill becoming automatic and requiring little conscious thought.
(D) The initial attempt to understand the basic requirements of the skill.

42. An athlete attributing their victory to their own hard work and ability is an example of what kind of attribution?
(A) Internal and stable
(B) External and unstable
(C) External and stable
(D) Internal and unstable

43. Which statement best describes 'eustress' in a sports context?
(A) A negative form of stress that hinders performance.
(B) A complete absence of stress, leading to apathy.
(C) A chronic stress condition resulting from overtraining.
(D) A positive form of stress that can motivate and energize an athlete.

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44. A weightlifter mentally rehearses a lift, imagining the feel of the bar, the engagement of the muscles, and the successful completion of the lift. This is a direct application of:
(A) Autogenic training
(B) Mental practice
(C) Stress inoculation
(D) Biofeedback

45. Consider the following statements regarding psychological factors in sports:
P. Self-confidence is an unwavering personality trait that cannot be changed.
Q. Anxiety is always a negative emotion that must be eliminated for optimal performance.
R. Concentration involves focusing on relevant cues and ignoring distractions.
S. Goal setting can enhance motivation, confidence, and focus.
T. Aggression can be either hostile (intent to harm) or instrumental (means to a goal).
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, S, and T only
(C) R, S, and T only
(D) P, R, and S only

46. What is the primary focus of 'social cohesion' within a sports team?
(A) The degree to which team members work together to achieve common goals.
(B) The formal roles and responsibilities assigned to each player.
(C) The team's overall win-loss record.
(D) The degree to which members like each other and enjoy one another's company.

47. All of the following are principles of motor skill learning EXCEPT:
(A) The principle of genetic inheritance
(B) The principle of practice
(C) The principle of feedback
(D) The principle of transfer

48. A marathon runner who feels a 'runner's high' and is running for the pure enjoyment of the activity is demonstrating:
(A) A need for social approval
(B) Intrinsic motivation
(C) A response to financial reward
(D) Hostile aggression

CHAPTER 04
Sports Psychology

1. Which of the following best defines Sports Psychology?
(A) The study of human anatomy, physiology, and biomechanics during physical activity.
(B) The scientific study of people and their behaviors in sports and exercise activities.
(C) The clinical analysis of sports injuries and their long-term medical rehabilitation.
(D) The systematic philosophical study of ethics, morality, and values in competitive sports.

2. Identify the correct statement regarding the importance of sports psychology in physical education.
(A) It helps in understanding psychological effects and enhancing athletic performance.
(B) It focuses on identifying and recruiting athletically gifted children at a young age.
(C) It is exclusively concerned with the clinical mental health of professional athletes.
(D) Its main goal is to replace physical training with specialized mental techniques.

3. An athlete who plays a sport for the love of the game and the sense of accomplishment they feel is primarily driven by what type of motivation?
(A) Extrinsic motivation
(B) Amotivation
(C) Intrinsic motivation
(D) Affiliative motivation

4. Read the following statements and choose the correct option:
Statement I : Motivation in sports is a static, unchanging trait within an athlete.
Statement II : The dynamics of motivation involve the interaction between personal factors (personality, needs) and situational factors (coaching style, environment).
(A) Statement I is correct, but Statement II is incorrect.
(B) Statement II is correct, but Statement I is incorrect.
(C) Both Statement I and Statement II are correct.
(D) Both Statement I and Statement II are incorrect.

5. Arrange the following stages of motor skill learning in the correct chronological order, from beginner to expert:
P. Autonomous Stage
Q. Associative Stage
R. Cognitive Stage
Choose the correct sequence:
(A) R, Q, P
(B) P, Q, R
(C) Q, R, P
(D) R, P, Q

6. All of the following are examples of extrinsic motivators in sports, EXCEPT:
(A) Winning a trophy
(B) Feeling personal satisfaction from mastery
(C) Receiving a cash prize
(D) Gaining social recognition

7. The "Big Five" model is a prominent framework within which theory of personality?
(A) Psychodynamic Theory
(B) Type Theory
(C) Humanistic Theory
(D) Trait Theory

8. What is the most appropriate description of group dynamics in a sports team?
(A) The set of forces and behavioral processes that occur within and between groups.
(B) A system of rewards and punishments used by the coach to control the players.
(C) The apathetic and uncooperative behavior exhibited by individual team members.
(D) The physical layout of the team's changing room and the local training facilities.

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(B) Emergent leaders are appointed by an external authority.
(C) Athletes cannot be leaders; only coaches can.
(D) The effectiveness of a leader is an interaction of qualities, situation, and members.

60. Read the following assertion and reason and choose the correct option:
Assertion (A) : High levels of cognitive state anxiety (worry) are more likely to negatively affect performance on tasks requiring complex decision-making than tasks based on strength or endurance.
Reason (R) : Cognitive anxiety creates attentional disruptions, narrowing focus and causing concentration to be directed towards irrelevant, threatening cues rather than task-relevant information.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

61. What does 'task cohesion' refer to?
(A) The social bonds and friendships among team members.
(B) The individual skills of each player on a team.
(C) The shared commitment among members to achieve group goals.
(D) The leadership style of the team captain.

62. A tennis player practices her serve for hours. Later, when playing a game of volleyball, she finds that the overarm serving motion is easier to learn. This is a clear instance of:
(A) Negative transfer of training
(B) Zero transfer of training
(C) Retroactive transfer of training
(D) Positive transfer of training

63. Which of the following is an example of 'cognitive restructuring' as a stress management technique?
(A) Changing negative self-talk into positive or productive self-talk.
(B) Systematically tensing and relaxing muscles.
(C) Using an electronic device to monitor heart rate.
(D) Taking a nap before a competition.

64. Read the following statements and choose the correct option:
Statement I : Personality refers to the characteristics or blend of characteristics that make a person unique.
Statement II : The core level of personality, according to Hollander's model, is the most stable and difficult to change.
(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct, but Statement II is incorrect.
(D) Statement II is correct, but Statement I is incorrect.

65. Match the following personality theories in List I with their core concepts in List II:
List I :(Theory)
P. Trait Approach
Q. Psychodynamic Approach
R. Humanistic Approach
S. Situational Approach
List II :(Core Concept)
1. Behavior is determined by the environment and circumstances.
2. Behavior is a function of self-actualization and growth.
3. Behavior is determined by relatively stable dispositions.
4. Behavior is a function of unconscious, inner conflicts.
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-4, R-2, S-1
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-3, R-1, S-4

66. What type of motivation is at play when an athlete participates in a sport to earn prize money or a scholarship?
(A) Extrinsic motivation
(B) Intrinsic motivation
(C) Amotivation
(D) Achievement motivation

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(C) Auditory imagery
(D) Kinesthetic imagery (a form of internal imagery)

143. Which of the following is the best example of a short-term psychological preparation strategy?
(A) A consistent pre-performance routine used before every competition.
(B) A five-year plan to develop mental toughness.
(C) Attending weekly sessions with a sport psychologist for a whole season.
(D) Setting a lifetime achievement goal.

144. According to Zajonc's social facilitation theory, the presence of others enhances performance on:
(A) Complex and unlearned tasks
(B) Simple and well-learned tasks
(C) All tasks equally
(D) Tasks requiring creativity

145. Consider the following techniques for relaxation or reducing anxiety in athletes:
P. Progressive Muscle Relaxation (PMR)
Q. Listening to fast, high-energy music
R. Autogenic Training
S. Positive, activating self-talk (e.g., "Let's go!")
T. Deep breathing exercises
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, S, and T only
(C) P, R, and T only
(D) All of the above

146. A swimmer who focuses on her stroke technique and breathing pattern during a race is demonstrating:
(A) A process goal orientation
(B) An outcome goal orientation
(C) Extrinsic motivation
(D) Social loafing

147. All of the following are psychological factors that can affect sports performance EXCEPT:
(A) Self-confidence
(B) Concentration
(C) Height and weight
(D) Motivation

148. The "multidimensional nature" of anxiety in sports refers to its two components, which are:
(A) Intrinsic and extrinsic
(B) Positive and negative
(C) Mental and physical
(D) Cognitive and somatic

149. Identify the incorrect pair.
(A) Cognitive Stage : High level of thinking required
(B) Associative Stage : Refining the skill
(C) Cognitive Stage : Very few errors made
(D) Autonomous Stage : Skill is automatic

150. A leader who consults with team members and uses their input before making a decision is best described as having a:
(A) Dictatorial style
(B) Democratic style
(C) Laissez-faire style
(D) Autocratic style

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151. What is the role of 'thinking' as a cognitive process for an athlete?
(A) To store memories of past performances.
(B) To automatically execute a well-learned motor skill.
(C) To regulate physiological arousal.
(D) To analyze situations, make decisions, and formulate strategies.

152. Read the following statements and choose the correct option:
Statement I : Mental practice, or imagery, is most effective when it is vivid and controllable.
Statement II : Mental practice can only be used by elite athletes and is not effective for beginners.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

153. What is the primary difference between anxiety and stress?
(A) Anxiety is always positive, while stress is always negative.
(B) Stress is a personality trait, while anxiety is a temporary state.
(C) Stress involves a perceived imbalance between demand and capability.

(A) P, Q, R, and S only
(B) Q, R, S, and T only
(C) P, R, S, and T only
(D) P, Q, R, S, and T

76. The use of cue words like "explode" or "focus" to trigger a desired response or mental state is a form of which psychological skill?
(A) Biofeedback
(B) Self-talk
(C) Autogenic training
(D) Group therapy

77. Which of the following is NOT a theory of personality mentioned in the scope of sports psychology?
(A) Trait Theory
(B) Psychodynamic Theory
(C) Quantum Physics Theory
(D) Humanistic Theory

78. A boxer who experiences a surge of adrenaline and heightened alertness before a match is experiencing a form of:
(A) Depression
(B) Apathy
(C) Mental fatigue
(D) Activation or arousal

79. Identify the incorrect pair regarding cognitive processes.
(A) Memory : The physical act of performing a skill
(B) Short-term memory : Limited capacity, temporary storage
(C) Thinking : Strategic planning and decision making
(D) Long-term memory : Unlimited capacity, permanent storage

80. Read the following assertion and reason and choose the correct option:
Assertion (A) : Team cohesion is positively related to performance, and this relationship is cyclical.
Reason (R) : Better performance can lead to increased cohesion, and increased cohesion can lead to better performance.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

81. What is the 'cognitive stage' of motor skill learning primarily focused on?
(A) Perfecting the skill with minimal conscious thought.
(B) Understanding the goal of the task and developing strategies.
(C) Refining the movement pattern through extensive practice.
(D) Eliminating all errors from the performance.

82. The belief in one's ability to successfully execute a specific task to obtain a certain outcome is called:
(A) Self-efficacy
(B) Self-esteem
(C) Self-awareness
(D) Self-criticism

83. Which psychological factor refers to a general, non-specific feeling of apprehension, often characterized by worry and negative thoughts?
(A) Emotion
(B) Stress
(C) Anxiety
(D) Aggression

84. Read the following statements and choose the correct option:
Statement I : Spectators' behavior, such as cheering or booing, has no psychological impact on the players' performance.
Statement II : The presence of a large, hostile crowd can increase anxiety and disrupt the concentration of visiting team players.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

85. Match the following terms in List I with their correct examples in List II:
List I :(Term)
P. Intrinsic Motivation
Q. Extrinsic Motivation
R. State Anxiety
S. Trait Anxiety
List II :(Example)

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(B) "Win the championship."
(C) "Score 20 points in the game."
(D) "Be the best player on the team."

105. Arrange the typical stages of group formation as described by Tuckman in their correct chronological order:
P. Norming
Q. Forming
R. Performing
S. Storming
Choose the correct sequence:
(A) Q, P, S, R
(B) Q, S, P, R
(C) S, Q, P, R
(D) P, S, R, Q

106. The phenomenon where an athlete's performance on a complex or newly learned task is impaired by the presence of an audience is known as:
(A) Social inhibition
(B) Social cohesion
(C) Social loafing
(D) Social facilitation

107. Which personality theory emphasizes personal growth, self-fulfillment, and the concept of self-actualization?
(A) Trait Theory
(B) Psychodynamic Theory
(C) Behaviorism
(D) Humanistic Theory

108. The main difference between hostile aggression and instrumental aggression lies in the:
(A) Level of physical contact
(B) Intent of the action
(C) Outcome of the action
(D) Rules of the sport

109. Which of the following is an incorrect statement regarding self-confidence in sports?
(A) Self-confidence is the belief that you can successfully perform a desired behavior.
(B) A lack of confidence and overconfidence can both be detrimental to performance.
(C) An athlete's level of self-confidence is fixed from birth and cannot be changed.
(D) Past performance accomplishments are a powerful source of self-confidence.

110. Read the following assertion and reason and choose the correct option:
Assertion (A) : Practicing a skill in a varied and random order (random practice) can lead to better long-term retention than practicing the same skill repeatedly (blocked practice).
Reason (R) : Random practice forces the learner to re-engage in cognitive processing, leading to elaborate memory.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

111. What is the primary purpose of psychological skills for activation?
(A) To achieve an optimal level of arousal and readiness for performance.
(B) To reduce anxiety and calm the athlete down.
(C) To analyze the opponent's strategy.
(D) To help an athlete fall asleep the night before a competition.

112. A golfer who blames a missed putt on an unexpected gust of wind is making what type of attribution?
(A) Internal, stable
(B) External, unstable
(C) Internal, unstable
(D) External, stable

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113. 'Bilateral transfer' is a specific type of transfer of training that refers to:
(A) The transfer of learning from one skill to another completely different skill.
(B) The transfer of learning from one limb to the contralateral, unpracticed limb.
(C) The transfer of learning from practice to a competitive situation.
(D) The negative impact of prior learning on a new skill.

114. Read the following statements and choose the correct option:
Statement I : Short-term memory has a very large, almost limitless capacity for storing information.
Statement II : Long-term memory is where

95. Consider the following statements regarding the psychological factor of concentration:
P. Concentration is the ability to focus on the task at hand while ignoring irrelevant cues.
Q. Nideffer's model proposes two dimensions of attention: width (broad/narrow) and direction (internal/external).
R. "Choking" under pressure is often a result of a breakdown in concentration.
S. An athlete's attentional focus must remain fixed and narrow throughout a competition.
T. Focusing on past mistakes during a game is an effective use of concentration.
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) P, Q, S, and T only
(C) R, S, and T only
(D) P, R, and S only

96. Which theory suggests that aggression is a natural, innate instinct in humans?
(A) Frustration-Aggression Theory
(B) Instinct Theory
(C) Social Learning Theory
(D) Revised Frustration-Aggression Theory

97. All of the following are characteristics of effective goal-setting EXCEPT:
(A) Setting specific and measurable goals
(B) Setting unrealistically difficult goals to provide a challenge
(C) Setting a combination of long-term and short-term goals
(D) Writing goals down and regularly monitoring progress

98. The 'associative stage' of motor learning is best described as:
(A) The phase where the learner practices to refine the movement and reduce errors.
(B) The initial phase of understanding the skill.
(C) The phase where performance is automatic and error-free.
(D) The phase where motivation is at its lowest point.

99. Identify the correct pair regarding leadership in sports.
(A) Emergent Leader : Appointed by an outside agency
(B) Prescribed Leader : Emerges from the group due to skill or respect
(C) Autocratic Leader : Employs a command-style, directive approach
(D) Democratic Leader : Makes all decisions alone

100. The concept that an optimal level of arousal is necessary for peak performance, and that levels too high or too low can be detrimental, is explained by:
(A) The Drive Theory
(B) The Social Facilitation Theory
(C) The Self-Efficacy Theory
(D) The Inverted-U Hypothesis

101. Which term describes the process of systematically using mental techniques to build and maintain the ideal psychological state for competition?
(A) Physical conditioning
(B) Nutritional planning
(C) Psychological skill training
(D) Biomechanical analysis

102. Read the following statements and choose the correct option:
Statement I : Trait anxiety is a behavioral disposition to perceive many situations as threatening.
Statement II : State anxiety is a temporary emotional state of apprehension in a specific situation.
(A) Both Statement I and Statement II are correct.
(B) Only Statement I is correct.
(C) Only Statement II is correct.
(D) Both Statement I and Statement II are incorrect.

103. In a team setting, unwritten rules of conduct or ethics that are accepted and adhered to by the members are known as:
(A) Formal roles
(B) The team constitution
(C) The leadership structure
(D) Team norms

104. Which of the following best exemplifies a process goal for a basketball player?
(A) "Keep my elbow in and follow through on every free throw."

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124. An athlete who feels that their actions are controlled by external rewards or pressures is experiencing a low level of which psychological need, according to Self-Determination Theory?
(A) Competence
(B) Autonomy
(C) Relatedness
(D) Achievement

125. Consider the following recognized psychological skills for athletes:
P. Imagery
Q. Goal Setting
R. Positive Self-Talk
S. Arousal Regulation
T. Concentration
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) P, Q, S, and T only
(C) S and T only
(D) P, Q, R, S, and T

126. What is the primary goal of sport and exercise psychology as a field?
(A) To exclusively treat mental disorders in athletes.
(B) To design optimal nutritional plans for peak performance.
(C) To focus solely on the biomechanics of elite athletes.
(D) To understand how psychology and activity interact.

127. All of the following are considered theories of personality EXCEPT:
(A) Drive Theory
(B) Trait Theory
(C) Type Theory
(D) Psychodynamic Theory

128. An archer feeling her heart pounding and her hands sweating before her final shot is experiencing:
(A) Cognitive state anxiety
(B) Somatic state anxiety
(C) Trait confidence
(D) Eustress

129. Identify the incorrect pair regarding motivational theories.
(A) Self-Determination Theory : Focuses on autonomy, competence, relatedness
(B) Inverted-U Hypothesis : Focuses on innate, instinctual drives
(C) Achievement Goal Theory : Focuses on task vs. ego orientation
(D) Attribution Theory : Focuses on how people explain success and failure

130. Read the following assertion and reason and choose the correct option:
Assertion (A) : The presence of an interactive audience tends to have a more pronounced effect on performance than the mere presence of co-actors or passive spectators.
Reason (R) : An interactive audience provides feedback and potential for evaluation, which can amplify arousal levels and impact concentration.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

131. In the context of thinking, a "game plan" or "race strategy" is an example of what cognitive process in sports?
(A) Memory retrieval
(B) Strategic thinking and planning
(C) Strategic thinking and planning
(D) Motor execution

132. Which of the following is the best example of positive transfer of training?
(A) The skills learned in chess helping to learn swimming.
(B) The wrist action in table tennis interfering with the wrist action in tennis.
(C) Learning to play the piano having no effect on learning to ski.
(D) The throwing motion learned in baseball facilitating the learning of the javelin throw.

133. A coach who says to the team, "If we win this game, we get tomorrow off practice" is using what form of motivation?
(A) Intrinsic reward
(B) Extrinsic reward (negative reinforcement)
(C) Extrinsic reward (positive reinforcement)
(D) Intrinsic punishment

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information is stored relatively permanently.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

115. Match the following psychological factors in List I with the theories or models most closely associated with them in List II:
List I :(Factor)
P. Anxiety/Arousal
Q. Motivation
R. Aggression
S. Concentration
List II :(Model/Theory)
1. Achievement Goal Theory
2. Nideffer's Attentional Style Model
3. Inverted-U Hypothesis
4. Frustration-Aggression Hypothesis
Codes:
(A) P-1, Q-3, R-2, S-4
(B) P-3, Q-1, R-4, S-2
(C) P-3, Q-4, R-1, S-2
(D) P-2, Q-1, R-4, S-3

116. The tendency for individuals to exert less effort when they are part of a group than when they are individually accountable is called:
(A) Social facilitation
(B) Group polarization
(C) Ringelmann effect
(D) Social loafing

117. Which of the following is a relaxation technique involving a series of verbal suggestions that induce a state of deep relaxation and feelings of warmth and heaviness in the limbs?
(A) Autogenic Training
(B) Biofeedback
(C) Autogenic Training
(D) Transcendental Meditation

118. The "interactional view" of motivation and personality suggests that behavior is a function of:
(A) The person alone
(B) The person and the situation interacting with each other
(C) The situation alone
(D) Unconscious motives only

119. Which of the following is an incorrect statement about long-term psychological preparation?
(A) It involves developing a strong base of psychological skills over a long period.
(B) It includes building resilience, confidence, and motivation.
(C) It is an integral part of an athlete's overall development.
(D) It is only necessary for professional athletes, not amateurs.

120. Consider the following statements regarding factors affecting sports performance:
P. Eustress is a positive form of stress that can enhance performance.
Q. Over-arousal invariably leads to better performance on all types of tasks.
R. Mental practice can improve performance by refining motor programs and building confidence.
S. Self-confidence is the same as arrogance and is always detrimental.
Which of the above statement(s) is/are correct?
(A) P and R only
(B) Q and S only
(C) P, Q, and R only
(D) Q, R, and S only

121. The role of a 'captain' on a sports team is an example of a:
(A) Informal role
(B) Situational role
(C) Formal role
(D) Group norm

122. A high jumper analyzing her technique by watching a video of her jump is what kind of attentional focus?
(A) Broad-internal
(B) Broad-external
(C) Narrow-internal
(D) Narrow-external

123. A key principle of motor skill learning is that practice should be:
(A) Always short and infrequent.
(B) Done without any feedback from a coach.
(C) Identical for every single repetition.
(D) Specific to the skill being learned.

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1. A person who is generally a nervous individual in most high-pressure situations.
2. An athlete playing for a trophy and prize money.
3. A calm person who suddenly feels very nervous before a championship final.
4. An athlete who plays because they love the challenge and feel competent.

Codes:
(A) P-4, Q-2, R-3, S-1
(B) P-2, Q-4, R-1, S-3
(C) P-4, Q-3, R-2, S-1
(D) P-1, Q-2, R-3, S-4

86. A leadership style where the leader allows the group to make their own decisions with very little input or control is known as:
(A) Autocratic
(B) Laissez-faire
(C) Democratic
(D) Transactional

87. A gymnast imagining herself performing a flawless routine on the floor is using which psychological skill?
(A) Goal setting
(B) Progressive muscle relaxation
(C) Self-talk
(D) Imagery / Mental Practice

88. What is 'zero transfer' of training?
(A) When a previously learned skill has no effect on the learning of a new skill.
(B) When a previously learned skill hinders the learning of a new skill.
(C) When a previously learned skill helps in learning a new skill.
(D) When a skill learned with one limb transfers to the other limb.

89. Which of the following is an incorrect statement regarding emotions in sport?
(A) Emotions can be either positive (e.g., joy) or negative (e.g., anger).
(B) Emotions can influence performance by affecting concentration and motivation.
(C) Athletes should strive to eliminate all emotions to perform well.
(D) Controlling emotions is a key psychological skill for athletes.

90. Consider the following statements regarding motivation in sports:
P. Intrinsic motivation involves engaging in an activity for external rewards.
Q. Achievement Goal Theory suggests athletes can be task-oriented or ego-oriented.
R. According to Attribution Theory, attributing failure to a stable, internal factor (e.g., "I'm not talented") can be detrimental to future motivation.
S. Both personal and situational factors interact to influence an athlete's motivation.
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, R, and S only
(C) P, R, and S only
(D) P, Q, and S only

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91. The "fight-or-flight" response is most closely associated with which psychological concept?
(A) Motivation
(B) Group Cohesion
(C) Memory
(D) Stress and Anxiety

92. A weightlifter using the cue word "power" to herself just before attempting a heavy lift is an example of what kind of psychological skill training?
(A) Relaxation through imagery
(B) Activation through self-talk
(C) Goal setting for strength
(D) Biofeedback for muscle tension

93. In the context of memory, rehearsal is a process that primarily helps to:
(A) Retrieve information from long-term memory.
(B) Erase unwanted memories.
(C) Maintain information in short-term memory and transfer it to long-term memory.
(D) Improve motor coordination.

94. A basketball team where the players have strong friendships and enjoy spending time together off the court is said to have high:
(A) Task cohesion
(B) Group conformity
(C) Role ambiguity
(D) Social cohesion

134. Read the following statements and choose the correct option:
Statement I : A democratic leadership style involves athletes in the decision-making process.
Statement II : An autocratic leadership style is most effective when a task is complex and requires creativity from the team.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

135. Match the following psychological terms in List I with their opposite or contrasting concepts in List II:
List I :(Term)
P. Intrinsic Motivation
Q. State Anxiety
R. Task Cohesion
S. Hostile Aggression
List II :(Contrast)
1. Trait Anxiety
2. Social Cohesion
3. Instrumental Aggression
4. Extrinsic Motivation
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-1, R-2, S-3
(C) P-4, Q-2, R-1, S-3
(D) P-2, Q-1, R-4, S-3

136. Which stage of group development is often characterized by conflict, rebellion, and resistance to the leader and group norms?
(A) Storming
(B) Forming
(C) Norming
(D) Adjourning

137. The physical symptoms of stress, such as increased heart rate, muscle tension, and shallow breathing, are collectively known as the:
(A) Cognitive response
(B) Behavioral response
(C) Somatic response
(D) Emotional response

138. Which of the following is a key implication of the 'transfer of training' principle in sports?
(A) Coaches should design drills that closely simulate the conditions and skills required in an actual game.
(B) Athletes should only ever practice one sport to avoid negative transfer.
(C) Transfer of training is a myth and has no practical application.
(D) Learning a new skill is completely independent of any prior experiences.

139. Which of the following is an incorrect statement regarding the measurement of personality?
(A) Inventories like the Cattell 16PF are used in sport psychology research.
(B) It is important to compare an athlete's scores to relevant norms.
(C) Understanding personality can help a coach tailor their communication style.
(D) Projective tests are considered highly objective and reliable for athlete selection.

140. Consider the following statements regarding group cohesion:
P. Cohesion is a dynamic process that reflects the tendency for a group to stick together.
Q. Social cohesion refers to the interpersonal attraction among group members.
R. Task cohesion reflects the degree to which members work together to achieve common goals.
S. High levels of cohesion are always associated with poor team performance.
Which of the above statement(s) is/are correct?
(A) P, Q, and S only
(B) Q, R, and S only
(C) P, Q, and R only
(D) P, R, and S only

141. The ability to bounce back from setbacks and adversity is a psychological characteristic known as:
(A) Arrogance
(B) Aggression
(C) Resilience
(D) Apathy

142. A golfer rehearsing the feeling of a perfect swing in her mind before stepping up to the ball is using:
(A) External imagery
(B) Kinesthetic imagery (a form of internal imagery)

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67. A state of emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation is known as:
(A) Peak performance
(B) Eustress
(C) Burnout
(D) Arousal

68. The "SMART" acronym in goal setting stands for:
(A) Simple, Meaningful, Active, Rewarding, Timely
(B) Strong, Motivational, Ambitious, Realistic, Tactical
(C) Social, Mental, Adaptable, Resilient, Tough
(D) Specific, Measurable, Achievable, Relevant, Time-bound

69. Which of the following is an incorrect statement about mental practice?
(A) It can help athletes learn new skills and strategies.
(B) It can be used to control emotional responses and anxiety.
(C) It is a complete substitute for physical practice.
(D) Vividness and controllability are key to effective imagery.

70. Consider the following statements regarding personality in sport:
P. The interactional approach considers both personal and situational factors as co-determinants of behavior.
Q. Type A personality is characterized by patience, relaxation, and a lack of urgency.
R. Measuring personality in athletes can help in understanding their behavior but should not be used for team selection alone.
S. Eysenck's theory includes dimensions like Extroversion-Introversion and Neuroticism-Stability.
Which of the above statement(s) is/are correct?
(A) P, R, and S only
(B) Q, R, and S only
(C) P, Q, and R only
(D) P, Q, and S only

71. The final stage of group development, where the team functions as a cohesive unit to solve problems and achieve common goals, is known as:
(A) Forming
(B) Storming
(C) Norming
(D) Performing

72. A basketball player is told by her coach to focus only on the rim of the hoop when shooting a free throw. This is an example of directing concentration using a:
(A) Narrow-external focus
(B) Broad-external focus
(C) Broad-internal focus
(D) Narrow-internal focus

73. What is the primary implication of 'transfer of training' for coaches and physical educators?
(A) To avoid teaching any new skills that are similar to old ones.
(B) To focus exclusively on either positive or negative transfer, but not both.
(C) To sequence learning experiences so that skills can facilitate new learning.
(D) To ensure that all training is done in complete isolation from other activities.

74. A high school athlete is offered a college scholarship. He accepts it primarily because he wants to please his parents and gain their approval. According to Self-Determination Theory, this reflects which type of regulation?
(A) Introjected regulation
(B) Intrinsic motivation
(C) Integrated regulation
(D) External regulation

75. Consider the following principles of motor skill learning:
P. Learning is enhanced when the learner is motivated.
Q. Distributed practice (shorter sessions with rest) is often more effective than massed practice.
R. Feedback that is specific and timely is beneficial for skill acquisition.
S. Transfer of learning can be positive, negative, or zero.
T. All learners progress through the stages of learning at the exact same rate.
Which of the above statement(s) is/are correct?

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(D) There is no difference; the terms are perfectly interchangeable.

154. Which of the following is the best example of 'negative transfer' of training?
(A) The flat-racket swing learned in squash interferes with learning the topspin swing in tennis.
(B) Learning to roller skate helps in learning to ice skate.
(C) Knowing the rules of soccer has no impact on one's ability to play the violin.
(D) Practicing shooting with the right hand improves shooting with the left hand.

155. Arrange the following actions in a logical sequence of applying goal-setting principles:
P. Evaluate and provide feedback on goal attainment.
Q. Identify specific and measurable short-term and long-term goals.
R. Develop strategies and a plan to achieve the goals.
S. Secure the athlete's commitment to the goals.
Choose the correct sequence:
(A) Q, S, R, P
(B) S, Q, P, R
(C) P, R, S, Q
(D) Q, R, P, S

156. The belief that one has the internal resources and external social support to overcome challenges is a key component of:
(A) Arousal
(B) Psychological resilience
(C) Aggression
(D) Social loafing

157. Which psychological principle suggests that behavior followed by a reward is more likely to be repeated?
(A) The principle of goal setting
(B) The principle of imagery
(C) The principle of reinforcement
(D) The principle of cohesion

158. What is a "pre-performance routine" in the context of short-term psychological preparation?
(A) A long-term plan for an athlete's entire career.
(B) A mandatory team meeting held once a season.
(C) The physical warm-up only, with no mental component.
(D) A sequence of task-relevant thoughts and actions an athlete systematically engages in prior to performance.

159. Which of the following is a correct statement regarding motivation?
(A) Motivation can be influenced by both internal factors (e.g., personality) and external factors (e.g., rewards).
(B) Motivation is not influenced by the coaching environment.
(C) Athletes are either motivated or not; there are no different types of motivation.
(D) Intrinsic motivation is fueled by a desire for fame and money.

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160. Read the following assertion and reason and choose the correct option:
Assertion (A) : The effectiveness of a particular leadership style is highly dependent on the specific sport and the characteristics of the team members.
Reason (R) : A coach may need to be autocratic during a fast-paced game situation but more democratic when discussing season goals with mature, experienced athletes.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

161. A footballer getting angry and deliberately trying to injure an opponent who fouled him is an example of:
(A) Instrumental aggression
(B) Hostile aggression
(C) Assertive play
(D) Prosocial behavior

162. The theory of personality that focuses on fundamental dimensions such as introversion/extroversion and stability/instability is the:
(A) Trait approach
(B) Psychodynamic approach
(C) Humanistic approach

200. What is the main purpose of a psychological skill training (PST) program?
(A) To teach athletes systematic mental practice to improve performance and enjoyment.
(B) To help athletes improve their physical fitness.
(C) To diagnose and treat severe clinical psychological disorders.
(D) To select the most talented athletes for a team.

201. Which term is used to describe the storage of information over an extended period?
(A) Short-term memory
(B) Sensory memory
(C) Long-term memory
(D) Working memory

202. Read the following statements and choose the correct option:
Statement I : Aggression in sport is any behavior, physical or verbal, with the intent to harm.
Statement II : Assertiveness involves legitimate physical or verbal force but with no intent to harm.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both Statement I and Statement II are correct.
(D) Both Statement I and Statement II are incorrect.

203. A soccer player visualizing the entire field and the movement of all players to make a strategic pass is using what kind of attentional focus?
(A) Narrow-internal
(B) Narrow-external
(C) Broad-internal
(D) Broad-external

204. The principle of motor learning that suggests that the type of practice should match the type of performance situation is:
(A) The principle of overload
(B) The principle of specificity
(C) The principle of reversibility
(D) The principle of individual differences

205. Arrange the following levels of personality structure, from the most external/dynamic to the most internal/stable, according to Hollander's model:
P. Psychological Core
Q. Role-Related Behavior
R. Typical Responses
Choose the correct sequence:
(A) Q, R, P
(B) P, R, Q
(C) R, Q, P
(D) Q, P, R

206. A person who exercises because they feel guilty if they don't is exhibiting a form of:
(A) Intrinsic motivation
(B) Amotivation
(C) Integrated regulation
(D) Extrinsic motivation (introjected regulation)

207. Which of the following is a primary goal of relaxation training for athletes?
(A) To help them recognize and control unwanted tension and anxiety.
(B) To increase heart rate and muscle tension.
(C) To increase their level of aggression.
(D) To make them less competitive.

208. The 'Forming' stage of group development is primarily concerned with:
(A) Resolving conflicts between team members.
(B) Orientation, familiarization, and assessing the group task.
(C) Working as a cohesive unit towards a common goal.
(D) The breakup of the group after the season.

209. Which of the following is an incorrect statement about sports psychology?
(A) It addresses the link between the mind and body in performance.
(B) Its primary and sole focus is on treating clinical depression in athletes.
(C) It involves the application of psychological principles to sport and exercise settings.
(D) It can help athletes with goal setting, concentration, and managing anxiety.

210. Read the following assertion and reason and choose the correct option:
Assertion (A) : Mental practice or imagery can enhance performance in both cognitive and motor tasks.

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171. Which of the following is the best definition of "concentration" in a sports context?
(A) The ability to exert maximum physical strength.
(B) A person's general level of confidence.
(C) The social bonds within a team.
(D) The ability to direct and maintain focus on relevant cues.

172. A weightlifter completes a successful lift and attributes it to "good luck." This is an example of an attribution that is:
(A) Internal and stable
(B) External and unstable
(C) Internal and unstable
(D) External and stable

173. The 'Norming' stage in Tuckman's model of group development is characterized by:
(A) The initial coming together of group members.
(B) Conflict and interpersonal struggles for status.
(C) The development of cohesion and shared norms.
(D) The group functioning as an effective, unified team.

174. When an athlete uses imagery to watch themselves perform a skill perfectly from the perspective of a spectator, they are using:
(A) Internal imagery
(B) Kinesthetic imagery
(C) Autogenic imagery
(D) External imagery

175. Consider the following statements regarding the application of sports psychology:
P. Sports psychology is important for enhancing performance.
Q. It can help athletes cope with the pressures of competition.
R. It can be used to improve the communication between coaches and athletes.
S. Psychological skills can be learned and practiced just like physical skills.
T. Its principles are only applicable to individual sports, not team sports.
Which of the above statement(s) is/are correct?
(A) P, Q, and S only
(B) Q, R, S, and T only
(C) P, Q, R, and S only
(D) P, Q, R, S, and T

176. The use of electronic devices to provide an athlete with feedback about their physiological state (e.g., heart rate, muscle tension) is known as:
(A) Autogenic training
(B) Biofeedback
(C) Progressive muscle relaxation
(D) Psycho-regulation

177. All of the following are part of the "Big Five" personality traits (OCEAN) EXCEPT:
(A) Openness
(B) Aggressiveness
(C) Conscientiousness
(D) Neuroticism

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178. A basketball coach calls a time-out and tells the team, "We need to focus on our defensive assignments and communicate on switches." This intervention is aimed at improving the team's:
(A) Collective concentration and strategic execution
(B) Overall self-confidence
(C) Social cohesion
(D) Level of aggression

179. Identify the incorrect pair regarding goals.
(A) Outcome Goal : To win the race
(B) Performance Goal : To run the race in under 4 minutes
(C) Outcome Goal : To keep my elbow high during the swim stroke
(D) Process Goal : To maintain a consistent arm swing

180. Read the following assertion and reason and choose the correct option:
Assertion (A) : Setting specific, difficult-but-realistic goals leads to better performance than setting vague or "do your best" goals.
Reason (R) : Specific goals direct attention, mobilize effort, and motivate development of strategies.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.
(D) A is false but R is true.

181. In motor learning, what is the term for feedback that a performer receives from their own sensory systems (e.g., the feeling of a good tennis shot)?
(A) Augmented feedback
(B) Extrinsic feedback
(C) Intrinsic feedback
(D) Terminal feedback

182. Which of the following is the most accurate description of "stress" in the context of sport?
(A) A personality trait that makes people nervous.
(B) A process involving an imbalance between situational demand and response ability.
(C) Any form of physical exercise.
(D) The desire to win a competition.

183. The importance of sports psychology lies in its ability to:
(A) Guarantee victory in every competition.
(B) Replace the need for a physical coach.
(C) Predict with 100% accuracy which young children will become elite athletes.
(D) Teach athletes how to enhance performance through mental skills.

184. Read the following statements and choose the correct option:
Statement I : Social loafing is more likely to occur in individual sports than in team sports.
Statement II : Social loafing can be decreased by increasing the identifiability of individual performances.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

185. Match the following leadership styles in List I with the situations where they might be most effective in List II:
List I :(Style)
P. Autocratic
Q. Democratic
R. Laissez-faire
S. Transformational
List II :(Situation)
1. Working with highly skilled, motivated, and independent athletes who need minimal supervision.
2. Inspiring a young, developing team to believe in a long-term vision and their own potential.
3. Making a quick, decisive tactical change during a fast-paced game.
4. Developing off-season team strategies with experienced and mature players.

Codes:
(A) P-1, Q-2, R-4, S-3
(B) P-3, Q-4, R-1, S-2
(C) P-3, Q-1, R-2, S-4
(D) P-2, Q-3, R-1, S-4

186. The concept that motivation is a function of an individual's desire for success and fear of failure is central to which theory?
(A) Achievement Motivation Theory (Need Achievement Theory)
(B) Self-Determination Theory
(C) Attribution Theory
(D) Social Learning Theory

187. "Choking" under pressure is often characterized by a shift in attentional focus from:
(A) External to internal and narrow
(B) Broad to narrow
(C) Internal to external
(D) Automatic processing to controlled, conscious processing

188. Which of the following is a key part of long-term psychological preparation for competition?
(A) Deciding what to eat for breakfast on game day.
(B) Systematically developing mental skills like confidence over months and years.
(C) Packing the sports bag the night before.
(D) A five-minute pre-game pep talk.

189. Which of the following is an incorrect statement about the relationship between spectators and performance?
(A) The presence of others can increase arousal.
(B) A supportive home crowd can provide a psychological advantage.
(C) Spectators' influence on performance is uniform across all athletes and situations.
(D) Zajonc's model suggests the presence of others facilitates the dominant response.

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190. Consider the following statements regarding transfer of training:
P. Positive transfer occurs when learning one skill helps in learning another.
Q. Negative transfer occurs when learning one skill interferes with learning another.
R. Zero transfer means prior learning has no effect on new learning.
S. The degree of transfer is related to the similarity between the two tasks.
Which of the above statement(s) is/are correct?
(A) P and Q only
(B) R and S only
(C) P, Q, and R only
(D) P, Q, R, and S

191. A state of mind where an athlete is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity is often called:
(A) Flow
(B) Stress
(C) Anxiety
(D) Burnout

192. A tennis coach giving a player feedback on their footwork after a rally is providing:
(A) Intrinsic feedback
(B) Augmented (extrinsic) feedback
(C) No feedback
(D) Proprioceptive feedback

193. The "interactional approach" to personality suggests that:
(A) Personality is solely determined by genetic traits.
(B) Behavior is a result of the interplay between personality traits and the situation.
(C) Personality is solely determined by the situation.
(D) Personality does not influence behavior in sports.

194. A key difference between 'emotion' and 'mood' is that:
(A) Emotions are intense reactions to events, while moods are diffuse and longer lasting.
(B) Emotions are longer lasting than moods.
(C) Moods are intense and directed, while emotions are more diffuse.
(D) There is no difference between emotion and mood.

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195. Consider the following statements regarding primary psychological needs that drive intrinsic motivation, according to Self-Determination Theory:
P. The need for financial reward
Q. The need for competence
R. The need for autonomy
S. The need for fame and recognition
T. The need for relatedness (social connection)
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, R, and T only
(C) P, S, and T only
(D) All of the above

196. Which leadership theory suggests that the best style of leadership depends on factors such as the leader's and members' characteristics and the situational context?
(A) Trait theory of leadership
(B) Behavioral theory of leadership
(C) Universal theory of leadership
(D) Contingency model of leadership

197. All of the following are psychological skills that require training and practice EXCEPT:
(A) Concentration
(B) Self-confidence
(C) Reflex action
(D) Arousal regulation

198. The 'catastrophe model' of anxiety and performance predicts that:
(A) Arousal and performance have a linear, positive relationship.
(B) High cognitive anxiety and arousal can lead to a sudden drop in performance.
(C) Performance drops gradually after the optimal point of arousal.
(D) Anxiety has no relationship with performance.

199. Identify the correct pair.
(A) Social Loafing : Trying harder in a group
(B) Group Norms : Formal, written team rules
(C) Task Cohesion : Liking one' teammates
(D) Group Dynamics : The forces that operate within a group

based on self-improvement and mastery.
Q. An ego-oriented athlete defines success based on beating others.
R. Coaches can foster a mastery climate by focusing on effort, improvement, and cooperation.
S. Extrinsic rewards always undermine intrinsic motivation.

Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, R, and S only
(C) P, R, and S only
(D) P, Q, and S only

221. Which psychological skill involves systematically tensing and then releasing various muscle groups throughout the body?
(A) Autogenic Training
(B) Biofeedback
(C) Progressive Muscle Relaxation
(D) Imagery

222. When the learning of a new skill is completely unaffected by a previously learned skill (e.g., learning to swim and learning to play chess), what type of transfer has occurred?
(A) Positive transfer
(B) Negative transfer
(C) Bilateral transfer
(D) Zero transfer

223. What is the most appropriate description of leadership in sports?
(A) A behavioral process of influencing individuals and groups towards set goals.
(B) The act of being the most skilled player on the team.
(C) A formal position of authority with no influence.
(D) The ability to intimidate opponents.

224. An athlete's belief about their capability to perform well in a specific situation is known as:
(A) Global self-esteem
(B) Self-confidence or self-efficacy
(C) Personality
(D) Arousal

225. Consider the following statements regarding psychological preparation for competition:
P. Long-term preparation involves building a foundation of mental skills over time.
Q. Short-term preparation involves strategies used immediately before and during a game.
R. A pre-performance routine is a key component of short-term preparation.
S. Long-term preparation is unnecessary if short-term preparation is good.
T. Both long- and short-term preparation are important for consistent performance.

Which of the above statement(s) is/are correct?
(A) P, Q, R, and S only
(B) Q, R, S, and T only
(C) P, R, S, and T only
(D) P, Q, R, and T only

226. The 'Inverted-U Hypothesis' relates which two factors in sports performance?
(A) Arousal and Performance
(B) Motivation and Cohesion
(C) Personality and Anxiety
(D) Stress and Aggression

227. All of the following are dimensions of attentional focus according to Nideffer's model EXCEPT:
(A) Broad
(B) Narrow
(C) Emotional
(D) Internal

228. A case where a swimmer practices a new turning technique, which initially makes her slower before she masters it and becomes faster, demonstrates the dynamic nature of:
(A) Group cohesion
(B) Personality development
(C) Spectator effects
(D) The learning process and potential temporary negative transfer

229. Identify the incorrect pair regarding personality theories.
(A) Trait Approach : Focuses on stable dispositions
(B) Psychodynamic Approach : Emphasizes unconscious factors
(C) Situational Approach : Emphasizes that personality traits are the sole determinant of behavior
(D) Humanistic Approach : Focuses on growth and self-actualization

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Reason (R) : Imagery works by producing neuromuscular activation and creating a mental blueprint.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

211. Which cognitive process is essential for a quarterback to remember a complex play that was drawn up by the coach?
(A) Concentration
(B) Aggression
(C) Memory
(D) Motivation

212. In the context of goal setting, an "outcome goal" is focused on:
(A) The specific actions needed to perform well.
(B) Achieving a personal standard of performance.
(C) The process of learning a new skill.
(D) The competitive result of an event (e.g., winning).

213. A feeling of worry and apprehension about an upcoming match is an example of what psychological factor?
(A) Self-confidence
(B) Group cohesion
(C) Anxiety
(D) Positive emotion

214. Read the following statements and choose the correct option:
Statement I : Task cohesion refers to how well team members get along on a personal level.
Statement II : Social cohesion refers to how well team members work together to achieve team goals.
(A) Statement I is correct.
(B) Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

215. Match the following psychological skills in List I with their primary purposes in List II:
List I :(Skill)
P. Self-Talk
Q. Imagery
R. Arousal Regulation
S. Goal Setting
List II :(Purpose)
1. To mentally rehearse scenarios and skills.
2. To provide direction and enhance motivation.
3. To manage levels of activation and anxiety.
4. To modify thoughts and enhance confidence/concentration.
Codes:
(A) P-1, Q-4, R-2, S-3
(B) P-4, Q-1, R-3, S-2
(C) P-4, Q-3, R-1, S-2
(D) P-2, Q-1, R-3, S-4

216. The theory that views personality as a set of stable characteristics that are fundamental units of personality is:
(A) The Trait Theory
(B) The Humanistic Theory
(C) The Psychodynamic Theory
(D) The Situational Theory

217. All of the following are potential benefits of high group cohesion EXCEPT:
(A) Increased conformity to group norms
(B) Increased individual effort
(C) Increased social loafing
(D) Improved team stability

218. An athlete who consistently worries about performance in evaluative situations, even minor ones, is likely high in:
(A) Trait anxiety
(B) State anxiety
(C) Self-confidence
(D) Extrinsic motivation

219. Which of the following is an incorrect statement about the principles of motor skill learning?
(A) Feedback is crucial for learning.
(B) Motivation enhances the learning process.
(C) Learning is a relatively permanent change in behavior.
(D) Massed practice is always superior to distributed practice for all skills.

220. Consider the following statements regarding motivation:
P. A task-oriented athlete defines success

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(B) Emotions are psychological states that can influence performance.
(C) Stress is the body's response to any demand placed upon it.
(D) Self-confidence is a critical factor in achieving peak performance.

240. Consider the following statements regarding leadership in sports:
P. Prescribed leaders are appointed by someone in authority.
Q. Emergent leaders emerge from the group and take charge.
R. The effectiveness of leadership depends on an interaction of personal, behavioral, and situational factors.
S. An autocratic leadership style is always the most effective.
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) Q, R, and S only
(C) P, R, and S only
(D) P, Q, and S only

241. What type of motivation is evident when a person joins a team because they value the social connections and friendships with teammates?
(A) Intrinsic motivation to experience stimulation
(B) Motivation driven by the need for relatedness
(C) Extrinsic motivation for rewards
(D) Amotivation

242. In the autonomous stage of motor learning, the performer's attention is:
(A) Freed up to focus on game strategy and external cues.
(B) Focused heavily on the mechanics of the movement.
(C) Distracted by irrelevant information.
(D) Completely disengaged from the task.

243. A tennis player worrying about double-faulting at match point is experiencing:
(A) Somatic state anxiety
(B) High self-confidence
(C) Cognitive state anxiety
(D) Eustress

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244. A coach helps an athlete reframe the thought "I'm going to fail" to "I am prepared and I will give my best effort." This technique is known as:
(A) Progressive muscle relaxation
(B) Biofeedback
(C) Negative thought stopping only
(D) Cognitive restructuring or reframing

245. Consider the following components related to Group Dynamics:
P. Group Cohesion (Task and Social)
Q. Group Norms
R. Formal and Informal Roles
S. Social Loafing
T. The complete independence of all members from each other.
Which of the above statement(s) is/are correct?
(A) P, Q, and R only
(B) P, Q, R, and S only
(C) Q, R, S, and T only
(D) All of the above are valid

246. Which statement best defines 'mental practice'?
(A) Reading books about sports strategy.
(B) The cognitive rehearsal of a physical skill in the absence of overt physical movements.
(C) Discussing game tactics with a coach.
(D) The physical warm-up before a competition.

247. The primary goal of developing psychological skills is to help athletes become more:
(A) Physically stronger
(B) Aggressive towards opponents
(C) Dependent on the coach for motivation
(D) Self-regulated and consistent in their performance

248. A novice archer shoots an arrow and the coach tells them "Your shot was high and to the left." This is an example of:
(A) Augmented feedback about the result (Knowledge of Results)
(B) Intrinsic feedback
(C) Augmented feedback about the performance (Knowledge of Performance)
(D) Proprioception

249. Identify the correct statement about personality in sports.
(A) All successful athletes share the exact same personality profile.

230. Read the following assertion and reason and choose the correct option:
Assertion (A) : Athletes with high self-confidence are more likely to set challenging goals and persist longer in the face of adversity.
Reason (R) : Self-confidence positively influences emotional states, concentration, and the interpretation of anxiety as facilitative rather than debilitative.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

231. The definition of sports psychology emphasizes both the scientific study and the _____ of knowledge.
(A) philosophical debate
(B) historical context
(C) financial implication
(D) practical application

232. An athlete who is driven by a combination of personal enjoyment and the desire to obtain a scholarship is influenced by:
(A) Both intrinsic and extrinsic motivation
(B) Only intrinsic motivation
(C) Only extrinsic motivation
(D) Amotivation

233. The process of storing information in memory is called:
(A) Retrieval
(B) Forgetting
(C) Encoding
(D) Thinking

234. Read the following statements and choose the correct option:
Statement I : The "home-field advantage" is solely due to the familiarity with the playing surface.
Statement II : The "home-field advantage" can be influenced by crowd support, travel factors for the away team, and referee bias.
(A) Only Statement I is correct.
(B) Only Statement II is correct.
(C) Both statements are correct.
(D) Both statements are incorrect.

235. Match the following psychological concepts in List I with their definitions in List II:
List I :(Concept)
P. Personality
Q. Motivation
R. Anxiety
S. Group Cohesion
List II :(Definition)
1. The direction and intensity of one's effort.
2. A dynamic process which is reflected in the tendency for a group to stick together.
3. The blend of characteristics that make a person unique.
4. A negative emotional state characterized by nervousness, worry, and apprehension.
Codes:
(A) P-1, Q-3, R-4, S-2
(B) P-3, Q-1, R-4, S-2
(C) P-3, Q-4, R-1, S-2
(D) P-2, Q-1, R-4, S-3

236. A key difference between 'thinking' and 'memory' is that thinking is a _____ process, while memory is a _____ process.
(A) storage; manipulative
(B) manipulative; storage
(C) physical; mental
(D) automatic; controlled

237. The 'Frustration-Aggression Hypothesis' posits that:
(A) Aggression is an innate drive.
(B) Aggression is a learned behavior from observing others.
(C) Aggression is always a direct result of frustration.
(D) Frustration always leads to better performance.

238. An athlete who meticulously follows a pre-shot routine to enhance focus is demonstrating a form of:
(A) Long-term psychological preparation
(B) Social loafing
(C) Hostile aggression
(D) Short-term psychological preparation for performance

239. Which of the following is an incorrect statement?
(A) Aggression and assertiveness are identical concepts in sport.

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(D) Situational approach

163. A cricket batsman feeling confident about his ability to face a particular bowler is an example of:
(A) High trait anxiety
(B) Low motivation
(C) High self-efficacy
(D) External locus of control

164. Read the following statements and choose the correct option:
Statement I : The 'cognitive' component of memory involves strategic thinking and problem-solving.
Statement II : The 'thinking' component of cognitive processes allows an athlete to store and retrieve past match experiences.
(A) Statement I is correct and Statement II is incorrect.
(B) Statement II is correct and Statement I is incorrect.
(C) Both statements are correct.
(D) Both statements are incorrect.

165. Match the following psychological concepts in List I to their key characteristics in List II:
List I :(Concept)
P. Mental Practice
Q. Goal Setting
R. Activation
S. Relaxation
List II :(Key Characteristic)
1. Using techniques to lower arousal and anxiety.
2. Using techniques to raise arousal to an optimal level.
3. Establishing specific targets for performance improvement.
4. Using imagery and visualization to rehearse a skill.

Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-3, S-1
(D) P-3, Q-4, R-1, S-2

166. A coach notices that his star player performs worse in big games when the stadium is full. According to social facilitation research, this is likely because the task is:
(A) Simple and well-learned for the player.
(B) Complex or the player feels pressure, causing over-arousal.
(C) Unimportant to the player.
(D) Being performed without any spectators.

167. Which of the following is a technique designed to increase arousal and activation before a competition?
(A) Progressive muscle relaxation
(B) Deep breathing exercises
(C) Autogenic training
(D) Listening to fast-paced, upbeat music

168. The "cognitive-affective stress model" suggests that stress is a process involving four stages. Which of the following is NOT one of those stages?
(A) Genetic predisposition
(B) Situational demand
(C) Cognitive appraisal
(D) Physiological response

169. Which of the following is an incorrect statement about group dynamics?
(A) Group dynamics are the behavioral processes that occur within a group.
(B) The development of group roles and norms is a part of group dynamics.
(C) Group dynamics are static and do not change over a season.
(D) Leadership style can significantly influence group dynamics.

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170. Consider the following statements regarding the psychological factor of anxiety:
P. Trait anxiety is a stable personality disposition to perceive situations as threatening.
Q. State anxiety refers to the immediate emotional state of apprehension in a particular situation.
R. Somatic anxiety involves the degree of physical activation perceived.
S. Cognitive anxiety involves the degree to which one worries or has negative thoughts.
Which of the above statement(s) is/are correct?
(A) P and Q only
(B) R and S only
(C) P, Q, and R only
(D) P, Q, R, and S

(B) Personality tests are foolproof predictors of athletic success.
(C) Understanding an athlete's personality can help a coach communicate more effectively with them.
(D) The situation or environment has no impact on an athlete's behavior.

250. Which of the following is the best example of intrinsic motivation?
(A) A mountaineer who climbs a peak for the sense of challenge and accomplishment.
(B) A young swimmer who practices daily to win a gold medal.
(C) A professional golfer who plays for large cash prizes.
(D) A basketball player who works hard to secure a lucrative endorsement deal.

Direction : Please read the following source carefully.

Sports psychology represents a critical sub-discipline within the broader field of physical education and sports science, focusing on the intricate relationship between psychological states and athletic performance. Its importance lies in its application to enhance not just the competitive outcomes of athletes but also their overall well-being and personal development. By applying psychological principles, coaches and athletes can better understand and manage the mental demands of training and competition. This includes fostering motivation, controlling anxiety, building self-confidence, and improving concentration. In the context of physical education, sports psychology contributes to creating a positive learning environment, promoting lifelong participation in physical activity, and developing essential life skills such as resilience, teamwork, and discipline. The field moves beyond a singular focus on elite performance, acknowledging that the psychological aspects of sport are relevant to participants at all levels, from school children to recreational enthusiasts. It provides a systematic framework for identifying psychological strengths and weaknesses, allowing for targeted interventions that can lead to more consistent and satisfying experiences in physical activities and sports. Therefore, its role is not merely supplementary but integral to achieving holistic development and peak performance.

Based on the above source, attempt the following five questions.

251. According to the passage, what is the primary focus of sports psychology?
(A) The physiological responses of athletes during competition.
(B) The relationship between psychological factors and sports performance.
(C) The biomechanical efficiency of sports movements.
(D) The nutritional strategies for enhancing athletic endurance.

252. Which of the following is NOT mentioned as a direct application of sports psychology for athletes?
(A) Prescribing specific dietary plans for peak performance.
(B) Building self-confidence and improving concentration.
(C) Managing anxiety associated with competition.
(D) Fostering intrinsic and extrinsic motivation.

253. The passage suggests that the importance of sports psychology in physical education extends to:
(A) focusing exclusively on identifying future elite athletes.
(B) implementing advanced bio-feedback technology in school gyms.
(C) promoting long-term engagement in physical activity and developing life skills.
(D) prioritizing competitive success over personal enjoyment.

254. What can be inferred about the scope of sports psychology from the passage?
(A) It is relevant only to professional athletes competing at an international level.
(B) It is a theoretical field with limited practical applications in coaching.
(C) It primarily deals with the diagnosis and treatment of severe mental disorders in athletes.
(D) It is applicable to individuals at all levels of sport and physical activity participation.

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(C) the expectations of their coach and teammates alone.
(D) a combination of their personality traits and the specific situation.

278. Which theoretical perspective on personality is described as being widely favoured in sports psychology?
(A) The psychodynamic approach
(B) The interactional approach
(C) The humanistic approach
(D) The trait theory approach

279. According to the passage, what is a primary purpose of measuring an athlete's personality?
(A) To guarantee selection for an elite team.
(B) To definitively predict whether an athlete will become a champion.
(C) To gain understanding for developing better coaching strategies.
(D) To screen out athletes with undesirable traits.

280. A personality theory that focuses on stable, enduring dispositions like introversion and neuroticism is known as a:
(A) Situational theory.
(B) Interactional theory.
(C) Developmental theory.
(D) Trait theory.

Direction : Please read the following source carefully.

The social fabric of a sports team is governed by group dynamics, which encompasses the attitudes and behaviours of individuals within the group and the interactions between them. A central concept within this domain is group cohesion, defined as the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs. Cohesion is often considered multidimensional, involving both task cohesion (the degree to which group members work together to achieve common goals) and social cohesion (the interpersonal attraction among group members). High levels of task cohesion are frequently linked to better team performance, as it fosters coordinated effort and shared commitment. Leadership is another critical element of group dynamics. A leader's style can significantly influence a team's cohesion, motivation, and overall climate. Leadership styles in sports are often categorized, for example, as autocratic, where the leader makes decisions independently, or democratic, where the leader actively involves the group in the decision-making process. The effectiveness of a particular leadership style is contingent on various factors, including the nature of the sport, the maturity of the athletes, and the specific situation. Understanding these dynamics is essential for building a synergistic team environment where the whole is greater than the sum of its parts.

Based on the above source, attempt the following five questions.

281. Group cohesion is described in the passage as:
(A) the tendency for a group to unite in pursuit of its goals.
(B) the level of individual skill within a team.
(C) the rivalry and conflict between team members.
(D) the leadership style imposed by the coach.

282. The passage distinguishes between two dimensions of group cohesion. What are they?
(A) Autocratic cohesion and democratic cohesion.
(B) Task cohesion and social cohesion.
(C) Individual cohesion and team cohesion.
(D) Offensive cohesion and defensive cohesion.

283. Which of the following best describes an autocratic leadership style?
(A) The leader encourages group participation in decision-making.
(B) The leader makes decisions independently without consulting the group.
(C) The leader delegates all decision-making authority to the athletes.
(D) The leader allows the team to function with no clear direction.

284. According to the text, high levels of task cohesion are often associated with:
(A) better coordinated effort and team performance.
(B) increased interpersonal conflict.
(C) poor team performance.
(D) a focus on individual statistics.

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Direction : Please read the following source carefully.

Among the psychological factors that significantly affect sports performance, emotions and anxiety hold a prominent position. Emotions are complex, short-lived affective states that involve physiological arousal, subjective feelings, and expressive behaviours, which can arise in response to specific events during training or competition. They can be positive (e.g., joy, pride) or negative (e.g., anger, disappointment) and can either facilitate or debilitate performance depending on their nature, intensity, and the athlete's interpretation. Anxiety, a specific emotional state, is characterized by feelings of nervousness, worry, and apprehension, and is often associated with physiological arousal. It is commonly conceptualized as having two components: cognitive anxiety, which involves the mental aspects like worry and negative thoughts, and somatic anxiety, which pertains to the physiological symptoms such as increased heart rate, muscle tension, and sweating. The relationship between anxiety and performance is not linear; while excessive anxiety is detrimental, a moderate level of arousal can be beneficial, preparing the body for optimal functioning. Understanding and regulating these emotional states is a key skill for athletes, as the ability to maintain an optimal emotional and anxiety level is often what separates successful performers from less successful ones under pressure.

Based on the above source, attempt the following five questions.

261. According to the passage, emotions in a sports context are described as:
(A) long-term, stable personality traits.
(B) purely physiological responses without a subjective component.
(C) mental states that are always detrimental to performance.
(D) complex, short-lived states involving feelings, arousal, and behaviour.

262. The passage distinguishes between cognitive anxiety and somatic anxiety. Which of the following best represents cognitive anxiety?
(A) Experiencing muscle tension before a race.
(B) Constantly worrying about making a mistake.
(C) Having a rapid heartbeat during a penalty shootout.
(D) Feeling nauseous in the locker room.

263. What does the passage suggest about the impact of emotions on athletic performance?
(A) All negative emotions invariably lead to poor performance.
(B) Only positive emotions can enhance an athlete's ability.
(C) The effect of an emotion depends on its type, intensity, and interpretation.
(D) Emotions have no scientifically proven effect on sports outcomes.

264. Based on the information provided, what can be inferred about the relationship between anxiety and performance?
(A) Any level of anxiety is harmful to an athlete's performance.
(B) Performance is maximized when an athlete experiences zero anxiety.
(C) Somatic anxiety is more debilitating to performance than cognitive anxiety.
(D) An optimal level of performance is often associated with a moderate level of anxiety.

265. The passage emphasizes that a key skill for successful athletes is the ability to:
(A) regulate their emotional and anxiety levels to an optimal state.
(B) completely eliminate all emotional responses during competition.
(C) focus solely on the physiological symptoms of anxiety.
(D) generate intense anger to intimidate opponents.

Direction : Please read the following source carefully.

Aggression and stress are two potent psychological factors that can profoundly influence an athlete's behaviour and performance. Aggression in sports is typically defined as any form of behaviour directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment. It is crucial to distinguish between hostile aggression, where the primary intent is to inflict injury or psychological harm, and instrumental aggression, where the aggressive act is a means to achieve a non-aggressive goal,

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into three types. Positive transfer occurs when the learning of one skill facilitates the learning or performance of another; for example, the skills learned in rollerblading may positively transfer to ice skating due to similarities in balance and body posture. Negative transfer happens when the learning of one skill hinders the learning of another. This is often seen when two skills have similar environmental cues but require different motor responses, such as the difference between a tennis forehand and a badminton forehand stroke. Finally, zero transfer (or neutral transfer) occurs when the learning of one skill has no discernible effect on the learning of another, as they are completely unrelated. Understanding these types of transfer is paramount for coaches and physical educators. They can structure training to maximize positive transfer by sequencing skills logically (e.g., from simple to complex) and to minimize negative transfer by making athletes aware of the subtle differences between potentially conflicting skills, thereby accelerating the learning process and optimizing performance.

Based on the above source, attempt the following five questions.

291. What is the central idea of 'transfer of training' as explained in the passage?
(A) The physical transfer of an athlete from one team to another.
(B) The transfer of psychological momentum from one game to the next.
(C) The effect that learning one skill has on the learning of a different skill.
(D) The financial transfer involved in professional sports contracts.

292. A volleyball player finding it easier to learn the overhead serve in tennis because of a similar arm motion is an example of:
(A) Positive transfer.
(B) Negative transfer.
(C) Zero transfer.
(D) Neutral transfer.

293. Negative transfer is most likely to occur under which condition?
(A) When two skills are completely unrelated.
(B) When two skills are identical in every aspect.
(C) When the first skill learned is much simpler than the second.
(D) When two skills have similar cues but require different responses.

294. Learning to swim having no impact on one's ability to learn chess is an instance of:
(A) Positive transfer.
(B) Zero transfer.
(C) Negative transfer.
(D) Bilateral transfer.

295. What is the primary implication of understanding transfer of training for coaches, according to the passage?
(A) To eliminate all forms of practice and rely on innate talent.
(B) To focus training only on one specific, isolated skill.
(C) To structure training sessions to maximize positive and minimize negative transfer.
(D) To ensure athletes never learn skills that might conflict.

Direction : Please read the following source carefully.

Effective psychological preparation for competition is a multi-faceted process that can be divided into long-term and short-term strategies. Long-term psychological preparation involves the systematic development of mental skills over a significant period, often an entire season or career. This includes building a strong foundation of self-confidence, developing resilience to setbacks, and integrating goal-setting principles into the athlete's overall training plan. It is a proactive approach aimed at cultivating a robust mental state. Short-term preparation, conversely, focuses on the period immediately preceding a competition, such as the days, hours, or minutes before an event. This involves pre-competition routines, visualization, and managing immediate anxiety. A key component of this preparation is psychological skill training (PST) for both activation and relaxation. Activation techniques, such as listening to upbeat music or using positive self-talk, are used to elevate arousal to an optimal level. Relaxation techniques, like deep breathing, progressive muscle relaxation, or meditation, are employed to lower excessive anxiety and tension. Furthermore, the presence of spectators can significantly influence performance through

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271. The passage defines self-confidence in athletes as:
(A) an arrogant display of superiority over opponents.
(B) the complete absence of doubt or fear.
(C) a realistic belief in one's capacity to perform successfully.
(D) a trait that is genetically inherited and cannot be developed.

272. Which of the following best describes the concept of concentration in sports as explained in the text?
(A) The ability to think about multiple things at once.
(B) The ability to focus on relevant cues and ignore distractions.
(C) Focusing only on internal thoughts and feelings.
(D) A fixed state of attention that never shifts.

273. An athlete setting a goal to "improve my free-throw percentage to 85% by the end of the season" is an example of what type of goal?
(A) An outcome goal
(B) A process goal
(C) An irrelevant goal
(D) A performance goal

274. According to the passage, how does high self-confidence affect an athlete's behaviour?
(A) It helps them maintain composure and persevere through difficulties.
(B) It makes them less likely to listen to their coach.
(C) It encourages them to give up easily when faced with challenges.
(D) It causes them to focus on external distractions.

275. The primary function of goal setting, as suggested by the passage, is to:
(A) guarantee victory over all competitors.
(B) eliminate the need for physical training.
(C) direct effort, track progress, and build confidence.
(D) create additional pressure and anxiety for the athlete.

Direction : Please read the following source carefully.

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Personality in sports psychology refers to the unique and relatively stable pattern of thoughts, feelings, and behaviours that characterize an individual. Understanding an athlete's personality can provide insights into their typical reactions in training and competitive settings. Various theories have been proposed to explain the structure and development of personality. Trait theories, for instance, suggest that personality is composed of a set of stable, enduring dispositions or traits (e.g., introversion-extroversion, neuroticism) that influence behaviour across different situations. In contrast, the interactional approach posits that behaviour is a function of both the individual's personality traits and the specific situation or environment. This latter perspective is widely favoured in sports psychology as it acknowledges that an athlete's behaviour is not solely determined by their innate traits but is also heavily influenced by the context of the sport, the team dynamics, and the competitive pressure. To assess these characteristics, various methods for the measurement of personality are employed. These can range from subjective assessments like interviews and observations to more objective, standardized psychometric tests and questionnaires. The goal of such measurement is not to predict athletic success definitively but to gain a better understanding of the athlete, which can aid in developing more effective psychological interventions and coaching strategies.
Based on the above source, attempt the following five questions.

276. What is the definition of personality provided in the passage?
(A) A unique and relatively stable pattern of thoughts, feelings, and behaviours.
(B) A temporary emotional state experienced during competition.
(C) The social reputation of an athlete.
(D) An athlete's physical characteristics and abilities.

277. The interactional approach to personality suggests that an athlete's behaviour is determined by:
(A) their innate, unchangeable personality traits only.
(B) the environmental or situational factors exclusively.

ANSWERS

1. (B) The scientific study of people and their behaviors in sports and exercise activities.
Sports psychology serves as a specialized branch of psychology that examines how psychological factors influence physical performance and how participation in sport affects psychological development. This field uses scientific methods to understand behavioral patterns, emotional responses, and cognitive processes in athletes. It focuses on optimizing performance while promoting overall well-being, health, and development through systematic study and the practical application of psychological knowledge within various exercise contexts.

2. (A) It helps in understanding psychological effects and enhancing athletic performance.
Integrating psychology into physical education allows educators to understand the mental processes that influence how students and athletes acquire skills and perform under pressure. This knowledge is vital for creating environments that foster growth and maximize potential. By recognizing the psychological impact of training and competition, professionals can implement strategies that enhance concentration, build resilience, and ultimately lead to superior athletic outcomes and long-term participation in physical activities.

3. (C) Intrinsic motivation
Motivation originating from within an individual is characterized by engaging in an activity for the inherent pleasure, satisfaction, and sense of personal mastery it provides. In sports, this drive manifests when athletes participate primarily because they enjoy the process and the feelings of competence associated with the task. Unlike external rewards, this internal focus leads to greater persistence and enjoyment, as the activity itself serves as the primary reward for the participant.

4. (B) Statement II is correct, but Statement I is incorrect.
Motivation is not a fixed attribute but rather a dynamic force that fluctuates based on various internal and external circumstances. It arises from the complex interaction between an individual's personal traits, such as their specific needs and goals, and situational factors like coaching environment and social support. Understanding this interplay is essential for coaches who wish to foster high levels of engagement and commitment in athletes through the manipulation of the training environment.

5. (A) R, Q, P
Learning a motor skill typically progresses through three distinct phases beginning with the cognitive stage, where the learner focuses on understanding the basic movement requirements. This is followed by the associative stage, characterized by refining the movement through practice and decreasing errors. Finally, the autonomous stage is reached when the skill becomes highly efficient and can be performed with minimal conscious thought, allowing the athlete to focus on more complex strategic game elements.

6. (B) Feeling personal satisfaction from mastery
External motivators involve rewards or pressures that come from outside the individual, such as trophies, money, or social status. In contrast, feelings of personal satisfaction and a sense of achievement through skill mastery represent internal drives. These internal feelings are the hallmark of intrinsic motivation, where the activity is performed for its own sake rather than to obtain a tangible prize or gain recognition from others in the competitive sports environment.

7. (D) Trait Theory
This model focuses on identifying and measuring the fundamental, stable characteristics that define an individual's personality across various situations. Within this framework, personality is viewed as a combination of five broad dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism. By assessing these traits, researchers can better understand an athlete's typical behavioral tendencies and psychological predispositions, providing a

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285. What can be inferred about the effectiveness of leadership styles from the passage?
(A) The democratic style is always superior to the autocratic style.
(B) Leadership has little to no impact on group cohesion.
(C) The effectiveness of a leadership style depends on the context and the athletes.
(D) Only experienced coaches can be effective leaders.

Direction : Please read the following source carefully.

The acquisition and refinement of motor skills are fundamentally dependent on cognitive processes, particularly memory and thinking. Memory is the process of encoding, storing, and retrieving information, which in a sports context relates to remembering movement patterns, strategies, and rules. For an athlete, memory enables the recall of a previously learned technique, such as the sequence of movements in a gymnastics routine or the footwork for a tennis serve. Thinking involves the manipulation of information stored in memory to solve problems, make decisions, and formulate strategies during a game. The principles of motor skill learning provide a framework for understanding how these skills are acquired. This process is often described as progressing through distinct stages. The initial cognitive stage involves the learner trying to understand the task, requiring significant thought and attention to verbal instructions and demonstrations. The second, or associative stage, involves refining the movement pattern through practice, where errors are gradually reduced. The final, or autonomous stage, is characterized by the skill becoming automatic, allowing the athlete to perform it with minimal conscious thought, thereby freeing up cognitive resources to focus on strategic aspects of the game. Effective coaching and practice are structured around these principles to facilitate a smooth progression through the stages of learning.
Based on the above source, attempt the following five questions.

286. According to the passage, what is the role of memory in sports?
(A) To increase an athlete's physical strength.
(B) To exclusively manage emotional responses during competition.
(C) To process nutritional information for diet planning.
(D) To encode, store, and retrieve information about movements and strategies.

287. In which stage of motor skill learning does the skill become automatic and require minimal conscious thought?
(A) The cognitive stage
(B) The associative stage
(C) The autonomous stage
(D) The strategic stage

288. The passage describes the cognitive stage of learning as a period where the learner is primarily focused on:
(A) performing the skill without any errors.
(B) understanding the nature of the task and how to perform it.
(C) competing against high-level opponents.
(D) refining the skill through extensive, repetitive practice.

289. What is the main function of the cognitive process of 'thinking' in a sports context as described in the text?
(A) Recalling a fixed sequence of movements.
(B) Experiencing emotions like joy or frustration.
(C) Automatically executing a well-learned skill.
(D) Solving problems and making decisions during play.

290. An athlete who is practicing a new tennis serve and is consciously trying to correct their arm position and ball toss is likely in which stage of learning?
(A) The associative stage
(B) The autonomous stage
(C) The pre-cognitive stage
(D) The competitive stage

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Direction : Please read the following source carefully.

The concept of transfer of training is a cornerstone of motor learning, addressing how learning one skill affects the learning or performance of another. This phenomenon is critical for designing efficient practice schedules and has significant implications in sports. Transfer can be categorized

255. The passage describes the role of sports psychology as integral rather than supplementary. This implies that:
(A) psychological training is more important than physical training.
(B) sports psychology can replace traditional coaching methods.
(C) mental aspects are a fundamental component of athletic development and performance.
(D) physical education teachers do not need knowledge of sports psychology.

Direction : Please read the following source carefully.

Motivation in sports is the fundamental internal or external force that directs, energizes, and sustains athletic behaviour toward a specific goal. Understanding its dynamics is crucial for coaches and athletes aiming for consistent effort and performance. Motivation can be broadly categorized into two types: intrinsic and extrinsic. Intrinsic motivation refers to the drive that comes from within an individual, such as the sheer joy of participation, the satisfaction of personal improvement, or the challenge of mastering a skill. This type of motivation is often associated with higher levels of persistence and long-term commitment. In contrast, extrinsic motivation is derived from external rewards, such as trophies, prize money, social recognition, or praise from a coach. While extrinsic rewards can be powerful in the short term, an over-reliance on them can sometimes undermine intrinsic motivation. Various theories attempt to explain the complexities of motivation. For instance, achievement motivation theory explores an individual's desire to succeed and avoid failure, while self-determination theory emphasizes the need for autonomy, competence, and relatedness. The dynamic interplay between these types and theoretical constructs determines an athlete's willingness to engage in rigorous training, overcome setbacks, and perform under pressure, making motivation a cornerstone of sports psychology.

Based on the above source, attempt the following five questions.

256. Based on the passage, what is the core function of motivation in sports?
(A) To guarantee victory in all competitions.
(B) To direct, energize, and maintain athletic behaviour.
(C) To eliminate all forms of performance anxiety.
(D) To ensure athletes receive financial compensation.

257. An athlete who continues to train diligently purely for the love of the sport and the feeling of accomplishment demonstrates which type of motivation?
(A) Extrinsic motivation
(B) Achievement motivation
(C) Recognition-based motivation
(D) Intrinsic motivation

258. According to the passage, what is a potential negative consequence of over-relying on extrinsic motivation?
(A) It can diminish an athlete's internal drive to participate.
(B) It can increase an athlete's desire to succeed.
(C) It can lead to a greater emphasis on skill mastery.
(D) It can enhance the feeling of autonomy and competence.

259. The passage mentions self-determination theory, which highlights the importance of:
(A) financial rewards, social status, and public acclaim.
(B) avoiding failure at all costs.
(C) autonomy, competence, and relatedness.
(D) comparing one's performance to that of others.

260. What can be inferred about the relationship between intrinsic and extrinsic motivation from the text?
(A) The interaction between them is complex and influences an athlete's long-term commitment.
(B) They are mutually exclusive and cannot coexist in an athlete.
(C) Extrinsic motivation is always more effective than intrinsic motivation.
(D) Intrinsic motivation is only relevant for amateur athletes, while professionals rely on extrinsic rewards.

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a phenomenon known as social facilitation. For some, a supportive crowd enhances performance, while for others, the pressure of being watched can be detrimental. Athletes must learn to manage this external factor as part of their overall psychological readiness.

Based on the above source, attempt the following five questions.

296. Which of the following is an example of a long-term psychological preparation strategy?
(A) A pre-shot routine performed just before a free throw.
(B) Listening to a specific playlist right before a match.
(C) A quick deep breathing exercise to calm nerves during a timeout.
(D) Systematically building resilience and self-confidence over a season.

297. The primary purpose of psychological skill training for activation is to:
(A) elevate an athlete's arousal to an optimal level for performance.
(B) lower an athlete's arousal to a resting state.
(C) distract the athlete from the upcoming competition.
(D) induce a state of deep sleep before an event.

298. A swimmer practicing progressive muscle relaxation to calm pre-race jitters is using a:
(A) activation technique.
(B) relaxation technique.
(C) social facilitation strategy.
(D) long-term goal-setting plan.

299. The passage describes the effect of spectators on performance as 'social facilitation'. This implies that the audience's presence:
(A) always improves an athlete's performance.
(B) can have either a positive or negative impact on performance.
(C) always harms an athlete's performance.
(D) has no measurable effect on experienced athletes.

300. Short-term psychological preparation is primarily concerned with:
(A) the period immediately leading up to a competition.
(B) the athlete's career-long mental development.
(C) the development of foundational psychological skills.
(D) building a strong coach-athlete relationship over many years.

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such as winning the contest. While instrumental aggression may be viewed as acceptable within the rules of certain sports, hostile aggression is generally considered unsportsmanlike. Stress, on the other hand, is a process where an individual perceives a substantial imbalance between the demands of a situation and their response capabilities, under conditions where failure to meet the demand has important consequences. This perceived imbalance can lead to a stress response, encompassing physiological and psychological changes that can disrupt performance. Factors causing stress, or stressors, in sport are numerous and can include the pressure of competition, fear of failure, and conflict with teammates or coaches. Effectively managing aggressive impulses and coping with stress are critical psychological skills for maintaining focus and achieving peak performance.

Based on the above source, attempt the following five questions.

266. Which statement accurately defines aggression as described in the passage?
(A) Any assertive action taken to win a competition.
(B) A behaviour with the intent to harm another individual.
(C) An emotional outburst resulting from frustration.
(D) A physical act that is within the rules of the sport.

267. A basketball player committing a hard foul to prevent an easy basket, without intending to injure the opponent, is an example of:
(A) Hostile aggression.
(B) Instrumental aggression.
(C) A typical stress response.
(D) An absence of aggression.

268. According to the passage, stress in sports occurs when there is a perceived imbalance between:
(A) situational demands and an athlete's ability to cope.
(B) intrinsic and extrinsic motivation.
(C) training duration and competition frequency.
(D) cognitive anxiety and somatic anxiety.

269. Based on the text, which of the following would be considered a stressor in a sports context?
(A) The joy of winning a championship.
(B) A feeling of high self-confidence.
(C) The fear of failure in a critical match.
(D) A well-executed play.

270. What is the key difference highlighted between hostile and instrumental aggression?
(A) The level of physical contact involved.
(B) Whether the act is successful or not.
(C) The emotional state of the aggressor.
(D) The primary intention behind the aggressive act.

Direction : Please read the following source carefully.

High-level athletic performance is heavily reliant on a combination of psychological factors, with self-confidence, concentration, and goal setting being paramount. Self-confidence is an athlete's realistic belief or expectation about their ability to execute a desired behaviour successfully. It is not about being arrogant but having a firm conviction in one's skills and preparation. Athletes with high self-confidence are more likely to persevere through adversity, maintain composure under pressure, and set challenging goals. Concentration, another vital factor, is the ability to maintain focus on relevant environmental cues while disregarding irrelevant ones. In a dynamic sports environment, it involves sustaining attention over time, shifting focus when necessary, and being aware of the situation without being overloaded by information. Distractions, both internal (e.g., negative thoughts) and external (e.g., crowd noise), can disrupt concentration and impair performance. Goal setting serves as a powerful technique to enhance both motivation and focus. By establishing specific, measurable, and time-bound objectives, athletes can direct their efforts, monitor progress, and build confidence. Goals can be categorized into outcome goals (e.g., winning a match), performance goals (e.g., achieving a personal best time), and process goals (e.g., maintaining a specific body posture), all of which contribute to a structured approach to training and competition.

Based on the above source, attempt the following five questions.

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consistent way to describe personality differences and predict potential reactions within different athletic and social contexts.

8. (A) The set of forces and behavioral processes that occur within and between groups.
Group dynamics involve the complex interactions and psychological forces that influence how team members work together towards common objectives. This area of study examines how roles, norms, and leadership styles impact the overall functioning and productivity of the group. Understanding these internal processes is essential for fostering a positive team environment, improving communication, and resolving conflicts, which collectively contribute to the effectiveness and cohesive performance of a sports team during competition.

9. (C) High levels of anxiety are always detrimental to performance.
The relationship between anxiety and performance is complex and not always negative. While excessive worry can disrupt concentration, a certain level of physiological arousal is often necessary for optimal performance. Individual athletes also differ in how they interpret their anxiety; some may view increased arousal as a positive sign of readiness rather than a threat. Therefore, the impact of anxiety depends on the intensity, the individual's interpretation, and the specific task requirements.

10. (A) Both A and R are true and R is the correct explanation of A.
Intrinsic motivation is highly valued in sports because it fosters long-term commitment and resilience. Athletes who participate for internal satisfaction tend to feel more autonomous and competent, which leads to greater persistence even when external rewards are absent. Because the behavior is driven by the enjoyment of the activity itself, it creates a more stable foundation for participation compared to extrinsic factors, which can diminish once the external reward is no longer available.

11. (D) The tendency for a group to stay united to achieve common goals.
Cohesion represents the dynamic process reflecting the inclination of a group to remain together and remain united in the pursuit of its instrumental objectives and for the satisfaction of member affective needs. It encompasses both the task-related commitment to shared success and the social bonds that connect team members. Strong cohesion is generally associated with better performance, increased satisfaction among participants, and a higher likelihood that the team will stay together during challenging periods.

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12. (B) Cause: Presence of spectators; Effect: Enhanced performance.
Social facilitation theory suggests that the presence of an audience increases an individual's arousal level, which tends to strengthen the dominant response. For simple or well-learned skills, the dominant response is usually the correct one, leading to improved performance when others are watching. Conversely, for complex or newly learned tasks, the increased arousal can interfere with the correct execution of the skill, potentially leading to errors. This highlights the importance of practice and mastery in competition.

13. (C) Cognitive Anxiety : Negative thoughts and concentration disruption
Anxiety in sports is a multidimensional construct consisting of both mental and physical components. The mental component involves negative expectations, worry about performance, and difficulty focusing on relevant cues. These thoughts can create significant mental interference, making it harder for an athlete to execute skills effectively. Recognizing this distinction is important for developing targeted interventions, as mental strategies like self-talk are often used to address the cognitive aspects of anxiety during high-pressure competitive situations.

14. (C) Both Statement I and Statement II are correct.
Mental imagery can be practiced from two primary perspectives to enhance skill acquisition and performance. Internal imagery requires the athlete to visualize the execution of a movement from their own eyes, focusing on the sensations and timing of the action. External imagery involves seeing oneself from a distance, similar to watching a recording of the performance. Both methods are valuable tools for refining technique, building confidence, and mentally preparing for the various demands of competition.

concentrating on a single cue, while an external focus is directed toward the environment rather than one's own internal thoughts or body sensations. By focusing specifically on the rim of the hoop, the basketball player is excluding all other distractions and zeroing in on a critical external target. This precise mental state is often necessary for the successful execution of closed skills that require high levels of accuracy.

73. (C) To sequence learning experiences so that skills can facilitate new learning.
Understanding how prior learning influences the acquisition of new skills is vital for effective coaching. By strategically sequencing activities, instructors can maximize positive transfer, where existing knowledge makes it easier to learn a new, related task. This approach involves identifying common elements between skills and designing training programs that build progressively upon previous experiences. Minimizing negative transfer and promoting positive connections between different movements leads to more efficient skill development and a more versatile and capable athlete over time.

74. (A) Introjected regulation
Within self-determination theory, introjected regulation describes motivation driven by internal pressures like guilt, shame, or the need to gain approval from others. In this case, the athlete accepts the scholarship primarily to satisfy parental expectations rather than for personal interest or a sense of value. Although the source of pressure is internal, the behavior is not fully self-determined because it is based on external standards. This type of motivation can sometimes lead to increased stress and lower overall satisfaction.

75. (A) P, Q, R, and S only
Effective motor learning is guided by several key principles, including the importance of motivation, the benefits of distributed practice, and the necessity of specific feedback. Additionally, the concept of transfer explains how previous skills can influence new learning. However, it is incorrect to assume that all learners progress at the same rate, as individual differences in talent, experience, and age significantly affect the speed and quality of skill acquisition. Tailoring instruction to these individual differences is essential for optimizing the learning process.

76. (B) Self-talk
Self-talk involves the internal or external dialogue an individual uses to direct their attention, build confidence, or manage their emotional state. By using specific cue words, athletes can trigger desired physical responses or mental focuses, such as "explode" for a powerful movement or "focus" for concentration. This technique is a versatile tool for self-regulation, helping performers maintain a positive mindset and stay committed to their game plan even under high-pressure conditions during training and competitive events.

77. (C) Quantum Physics Theory
Personality theories in sports psychology focus on explaining human behavior through various psychological frameworks. Trait, psychodynamic, and humanistic theories all offer different perspectives on how personality develops and influences performance. However, quantum physics is a branch of physical science that deals with the behavior of matter and energy at the atomic level and is not used to explain personality in a psychological context. Therefore, it falls outside the scope of established personality research in the field of sports and exercise.

78. (D) Activation or arousal
These terms describe the physiological and psychological state of alertness and readiness for action. It involves a blend of mental activity and physical responses, such as increased heart rate and adrenaline release, which prepare the body for the demands of competition. Finding the optimal level of activation is crucial, as being either under-aroused or over-aroused can negatively impact performance. Athletes use various techniques to manage their arousal levels, ensuring they are mentally sharp and physically energized before a match starts.

79. (A) Memory : The physical act of performing a skill
Memory is a cognitive process involving the encoding, storage, and retrieval of information, rather than the physical execution of a movement itself. While memory is essential for retaining the instructions and strategies needed

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technical processes required, an athlete can maintain high levels of motivation and track their progress accurately. This systematic approach provides a structured roadmap for improvement, ensuring that training efforts are directed towards relevant areas and that performance results can be objectively evaluated and adjusted as the athlete develops.

23. (B) Statement II is correct, but Statement I is incorrect.
Motivation in sports is a highly dynamic and fluid state that changes based on internal drives and the external environment. It is not a permanent trait but an interaction between personal factors like an athlete's personality and goals, and situational factors such as the coach's behavior and the competitive atmosphere. Recognizing that motivation is susceptible to change allows coaches to implement strategies that foster a more positive and engaging environment to sustain high performance levels.

24. (A) Skills are learned more effectively when the learner understands the goal and mechanics of the movement.
Effective skill acquisition is significantly enhanced when individuals have a clear conceptual understanding of what they are trying to achieve and how the movement should be executed. This cognitive awareness allows the learner to form a mental blueprint of the task, which guides their practice and helps them correct errors more efficiently. Providing clear instructions and demonstrations at the beginning of the learning process is therefore crucial for establishing a solid foundation for future skill development.

25. (B) P, Q, S, and T only
Modern motivational theories emphasize the importance of psychological needs, goal orientations, and the interpretation of outcomes. Self-determination theory focuses on autonomy and competence, while achievement goal theory explores mastery versus outcome focus. Attribution theory examines how individuals explain their results, and reinforcement involves using consequences to shape behavior. In contrast, the inverted-U hypothesis specifically addresses the relationship between arousal and performance rather than being a comprehensive theory of personality or general motivation in athletic settings.

26. (A) Autocratic style
This leadership approach is characterized by a high degree of control where the leader makes decisions independently and expects immediate compliance from subordinates. It is often most effective in situations requiring quick action or when clear, direct instructions are necessary for success. While it ensures efficiency in certain contexts, it may limit the personal input and creativity of team members. Understanding when to apply this directive style is a key skill for coaches in fast-paced competitive environments.

27. (D) Progressive Muscle Relaxation (PMR)
Activation techniques are designed to increase physiological and psychological arousal to prepare an athlete for the high demands of competition. Activities like listening to energetic music, using powerful self-talk, and performing physical warm-ups serve to energize the body and mind. Conversely, methods like progressive muscle relaxation are specifically intended to lower arousal levels and induce calmness. Therefore, relaxation techniques are generally used for stress management and recovery rather than for immediate pre-competition activation and readiness.

28. (B) The negative impact of cognitive state anxiety leading to performance disruption.
In high-pressure situations, an athlete may experience intense worry and negative thoughts, which are hallmarks of cognitive state anxiety. These mental distractions can interfere with the execution of well-learned movements by causing the athlete to over-analyze their actions, a phenomenon often called "paralysis by analysis." This disruption leads to a breakdown in the fluid, automatic performance typical of the autonomous stage of learning, resulting in errors that would not normally occur during low-pressure practice sessions.

29. (C) Negative Transfer : Learning to drive an automatic car making it easier to drive a manual car.
Transfer of training describes how prior learning influences the acquisition of new skills. Positive transfer occurs when previous

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15. (A) P-4, Q-3, R-1, S-2
Psychological skill training uses diverse techniques to optimize an athlete's mental state. Progressive Muscle Relaxation involves the systematic tensing and relaxing of muscle groups to reduce physical tension. Autogenic training uses self-suggestions of warmth and heaviness to induce relaxation. Biofeedback utilizes technology to monitor physiological functions, helping athletes gain voluntary control over stress responses. Imagery involves mental rehearsal using all senses. Together, these techniques help athletes manage arousal, improve focus, and refine their motor skills.

16. (B) Negative Transfer
This phenomenon occurs when a previously learned skill or habit interferes with the acquisition or performance of a new, similar task. In this scenario, the specific wrist mechanics from badminton conflict with the different requirements of a tennis stroke, making the learning process more difficult. Identifying such conflicts is essential for coaches so they can adjust training methods to help athletes differentiate between the competing movement patterns and successfully adapt to the new sport's technical demands.

17. (B) Stress and anxiety regulation
Athletes often face high-pressure situations that trigger physiological and psychological stress responses. By utilizing techniques such as controlled deep breathing and positive self-talk, an individual can manage their arousal levels and maintain a focused mindset. These self-regulation strategies are essential for reducing the negative impact of pre-game nerves and ensuring that an athlete remains calm and confident. Mastering these skills allows for more consistent performance and helps prevent the mental disruptions caused by excessive anxiety.

18. (A) Personality tests can predict athletic success with perfect accuracy.
While personality assessment provides valuable insights into an athlete's behavioral tendencies and mental traits, it is not a foolproof method for predicting performance. Success in sports is influenced by a complex array of factors, including physical ability, technical skill, tactical understanding, and situational variables. Personality tests should be used as one of many tools to understand an athlete rather than as the sole basis for selection, as there is no single profile that guarantees elite achievement.

19. (C) Broad-external
Effective performance in many team sports requires an athlete to scan a wide area of the environment to gather critical information. This specific attentional style allows a player to simultaneously track multiple moving objects and people, such as the positions of teammates and opponents across the field. By maintaining an expansive focus on external cues, the athlete can make rapid, informed decisions and react effectively to the dynamic and unpredictable nature of the game as it unfolds.

20. (C) P, Q, and S only
Group dynamics involve members who interact and influence one another, often within a structure defined by formal roles like captaincy. A common challenge in teams is social loafing, where individual effort decreases due to a lack of perceived accountability. While group norms guide behavior, they are typically informal, unwritten expectations rather than formal contracts. Understanding these concepts helps in managing team performance and ensuring that all members remain motivated and committed to their specific organizational roles.

21. (C) Aggressive behavior used as a means to achieve a non-aggressive goal.
In competitive sports, this form of behavior involves the use of force or aggressive actions where the primary objective is to gain a strategic advantage or achieve victory rather than to inflict injury. For example, a hard tackle in soccer intended to win the ball is considered instrumental. Although the action may cause harm, the intent is focused on the game's outcome. Distinguishing between intent and consequence is key to understanding different types of aggression in athletics.

22. (B) The SMART principle (Specific, Measurable, Achievable, Relevant, Time-bound)
Setting effective goals involves defining clear, quantifiable targets that are both challenging and attainable within a specific timeframe. By focusing on both the outcome and the specific

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athlete perceives and responds to the demands of competition. Although diet can influence mood and energy, the primary focus of sports psychology remains on the cognitive and emotional dimensions of performance.

37. (C) Transformational leadership
This leadership style goes beyond simple exchanges of rewards and punishments to inspire and motivate followers to achieve exceptional results. A leader using this approach focuses on building strong relationships based on mutual respect and encourages personal growth and development. By fostering a shared vision and challenging athletes to reach their full potential, the coach helps create a high-performance culture where individuals feel valued and empowered. This approach is highly effective for building long-term commitment and team cohesion.

38. (B) Mental practice or imagery
Imagery involves using all the senses to create or recreate experiences in the mind, allowing athletes to practice skills and strategies without physical movement. This technique can be used to refine motor patterns, build self-confidence, and manage emotional responses. By vividly imagining successful performance, athletes can strengthen the neural pathways associated with specific actions. Effective imagery requires practice and should be as realistic as possible, incorporating the sights, sounds, and physical sensations of the actual sports environment.

39. (D) High group cohesion guarantees team success.
While strong group cohesion is a significant factor that often contributes to better team functioning and improved results, it does not guarantee victory. Success in sports depends on many other variables, including individual talent, technical skill, strategic planning, and the relative strength of the opposition. A very cohesive team may still be defeated by a more skilled or better-prepared opponent. Therefore, cohesion should be viewed as a facilitator of performance rather than a definitive predictor of the final outcome.

40. (A) P and Q only
Goal setting is most effective when it includes a variety of goal types. Outcome goals focus on the final result, such as winning a match, while process goals focus on the specific actions and techniques required during the performance. Relying solely on outcome goals can increase anxiety because they are not always within the athlete's direct control. In contrast, focusing on process goals provides a sense of control and helps maintain concentration on the necessary steps for success in competition.

41. (C) The performance of the skill becoming automatic and requiring little conscious thought.
In the final stage of motor learning, the execution of a skill becomes highly efficient and refined. The athlete no longer needs to consciously think about the individual components of the movement, as the motor program has become deeply ingrained. This automaticity allows the performer to shift their attentional focus toward higher-level game strategies, environmental cues, and decision-making. At this level, errors are rare, and the athlete can consistently perform the skill even under high-pressure competitive conditions.

42. (A) Internal and stable
Attribution theory examines how individuals explain the causes of their successes and failures. Attributing a win to hard work and personal ability reflects internal factors because the cause originates from within the individual. These factors are also considered stable because they are relatively permanent characteristics or consistent efforts. Such attributions generally enhance self-confidence and motivation, as the athlete believes that their continued success is within their own control and is based on their enduring strengths and dedicated training.

43. (D) A positive form of stress that can motivate and energize an athlete.
Not all stress is harmful; eustress represents the constructive and beneficial form of stress that provides the energy and focus needed for high performance. It is often experienced as excitement or healthy challenge rather than a threat. This positive arousal helps an athlete stay alert, motivated, and mentally prepared for the demands of competition. Managing stress involves learning to interpret these feelings as facilitative, allowing the athlete to use the physiological boost to enhance their performance rather than becoming overwhelmed.

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experience facilitates new learning, such as similar serving motions in different sports. Zero transfer means there is no relationship between the tasks. Negative transfer happens when old habits interfere with new ones. Driving an automatic car actually makes learning a manual car slightly more complex due to the different pedal requirements, making it an example of interference rather than facilitation.

30. (A) Both A and R are true and R is the correct explanation of A.
Extensive research indicates that there is no specific set of personality traits that universally distinguishes athletes from the general population. The relationship between personality and athletic performance is highly complex and influenced by many variables. While certain traits might be more common in specific sports, the wide variety of personality types among successful athletes suggests that situational factors and individual differences play a significant role. Therefore, personality alone cannot be used to predict or define athletic status.

31. (A) The process of acquiring, storing, retaining, and later retrieving information.
Memory is a fundamental cognitive process that enables athletes to learn from past experiences and apply that knowledge to future performance. It involves encoding new information, storing it in the brain, and retrieving it when needed during practice or competition. Effective memory is crucial for remembering complex plays, technical corrections, and strategic game plans. Without the ability to retain and access information, the learning of motor skills and the development of tactical expertise would be impossible.

32. (B) State anxiety
This form of anxiety refers to an immediate, temporary emotional state characterized by consciously perceived feelings of tension and apprehension, along with increased physiological arousal. It occurs in response to a specific threatening or high-pressure situation and fluctuates in intensity over time. Unlike trait anxiety, which is a stable personality characteristic, this state is situational. Recognizing this type of response helps athletes and coaches implement appropriate coping strategies to manage nerves during critical moments of a competition.

33. (B) Progressive Muscle Relaxation (PMR)
This relaxation technique focuses on helping individuals develop a physical awareness of the difference between muscle tension and a relaxed state. By systematically tensing and then releasing specific muscle groups throughout the body, an athlete can learn to identify and alleviate unwanted physical stress. This skill is particularly useful for managing the somatic symptoms of anxiety, allowing the performer to achieve an optimal physical state for competition by consciously reducing excessive muscle tightness that could hinder fluid movement.

34. (C) Both Statement I and Statement II are correct.
Psychological preparation in sports occurs across different timeframes to ensure an athlete is mentally ready for competition. Long-term preparation involves the steady development of foundational mental skills like motivation and resilience over a long period. Short-term preparation, on the other hand, focuses on the immediate mental routines and strategies used in the hours and days leading up to a specific event. Both stages are essential for maintaining a high level of performance and mental consistency throughout an athlete's career.

35. (B) P-4, Q-1, R-3, S-2
Success in sports depends on various psychological factors. Self-confidence is the belief in one's ability to succeed, while concentration is the capacity to maintain focus on relevant cues. Stress arises when there is a perceived imbalance between task demands and an individual's capabilities. Aggression involves behaviors intended to harm others. Understanding these definitions is essential for developing mental training programs that help athletes improve their focus, manage pressure, build confidence, and maintain appropriate conduct during competition.

36. (D) Nutritional habits
While nutrition is critical for physical health and athletic performance, it is categorized as a physiological or biological factor rather than a psychological one. Psychological factors specifically involve the mental and emotional processes that influence behavior, such as motivation, anxiety, and concentration. These internal mental states directly affect how an

51. (C) Sports Psychology
Sports psychology is the scientific study of how psychological factors affect performance and how participation in physical activity influences psychological development. This field examines topics such as motivation, anxiety, leadership, and team dynamics to help athletes achieve their full potential. By applying psychological principles, professionals can design interventions that improve performance and promote the mental well-being of participants. It is an essential component of modern athletic training, addressing both the mental and physical aspects of competitive sports and exercise.

52. (C) Only statement II is correct.
The influence of a crowd on athletic performance is complex and not always positive. While crowd support can energize players and contribute to the "home advantage," it can also increase pressure and anxiety, particularly during complex tasks. Research suggests that for well-learned skills, an audience may facilitate performance, but for new or difficult tasks, it may cause disruption. Therefore, the impact of spectators depends on the nature of the task and the individual athlete's ability to manage social pressure.

53. (C) Reinforcement
This motivational strategy involves using consequences to influence the likelihood of a behavior being repeated. Positive reinforcement provides rewards for desirable actions, such as praise for good effort, while negative reinforcement involves removing an unpleasant stimulus. Punishment, on the other hand, is used to decrease unwanted behaviors. By systematically applying these consequences, a coach can shape an athlete's behavior and maintain focus on specific performance goals, although excessive reliance on external rewards can sometimes impact intrinsic motivation.

54. (B) State anxiety
This concept describes the temporary and situational feelings of nervousness and tension that occur in response to a specific event, such as a high-stakes competition. It is characterized by subjective feelings of apprehension and is often accompanied by physiological changes like an increased heart rate. Unlike trait anxiety, which is a stable personality disposition, state anxiety varies in intensity and duration depending on the perceived threat of the situation. Managing this state is a primary goal of mental skills training in sports.

55. (B) R, S, P, Q
Effective pre-competition preparation follows a logical progression starting with basic needs like waking up and having a proper meal. This is followed by mental and physical preparation during travel and upon arrival at the venue. Finally, the athlete uses specific mental routines like imagery or self-talk immediately before the performance begins. This structured approach ensures that the individual is physically fueled, mentally focused, and emotionally ready to meet the demands of the upcoming game or race in an organized manner.

56. (A) Focusing on process-oriented cues
Concentration is the ability to maintain focus on relevant information while ignoring distractions. Focusing on process cues, such as the specific technical steps of a movement, is an effective way to maintain control and stay present in the moment. In contrast, attending to past errors, worrying about the final outcome, or being distracted by crowd noise can disrupt focus and negatively impact performance. Directing attention toward controllable, task-relevant actions is a key strategy for maintaining peak performance during competition.

57. (C) Instrumental aggression
In this scenario, the player's primary objective is to achieve a strategic goal—winning the ball—rather than causing harm to the opponent. Although the action is forceful and may result in contact, the intent is focused on the task and the outcome of the game. This form of behavior is common in many contact sports and is considered acceptable when it falls within the rules of the game. Distinguishing the primary goal is essential for understanding the psychological nature of aggressive actions in sports.

58. (A) The process of using one's mind to consider or reason about game strategy.
Thinking is a fundamental cognitive process that involves the mental manipulation of information to solve problems, make decisions, and develop strategies. In sports, this might include analyzing

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44. (B) Mental practice
Mental practice, also known as imagery, is a cognitive process where an athlete vividly rehearses a specific skill or sequence of actions in their mind. By visualizing the sensations and successful completion of a task, the performer can strengthen the mental blueprints and neural pathways required for the actual physical execution. This technique is widely used across various sports to improve technical precision, build confidence, and maintain focus, serving as a powerful supplement to physical training and competitive preparation.

45. (C) R, S, and T only
Psychological factors are dynamic and can be developed through systematic training. While traits like self-confidence are relatively stable, they are not unchangeable. Similarly, anxiety is not always negative; its impact depends on how an athlete interprets and manages their arousal. Concentration involves focusing on task-relevant cues, and goal setting is a powerful tool for improvement. Understanding that aggression can be either hostile or instrumental helps in analyzing behavioral patterns during competition and developing appropriate emotional control strategies.

46. (D) The degree to which members like each other and enjoy one another's company.
Social cohesion focuses on the interpersonal relationships and emotional bonds between team members. It reflects the degree of mutual attraction, friendship, and enjoyment individuals find in being part of the group. While task cohesion involves working toward shared goals, social cohesion is about the quality of the team's social environment. High social cohesion can lead to better communication and a more supportive atmosphere, which can enhance the overall experience and long-term commitment of the athletes.

47. (A) The principle of genetic inheritance
While genetics play a role in physical potential, motor skill learning primarily focuses on the principles of practice, feedback, and transfer. These principles describe how skills are acquired and refined through repeated effort and information. Practice provides the necessary repetition for skill stabilization, feedback offers information for error correction, and transfer explains how prior experience influences new learning. Together, these factors form the basis of effective instructional strategies used by coaches and physical educators to develop athletic proficiency over time.

48. (B) Intrinsic motivation
Intrinsic motivation occurs when an individual engages in an activity purely for the inherent enjoyment and satisfaction it brings. A runner who experiences a "runner's high" is motivated by the positive feelings and personal fulfillment derived from the activity itself, rather than by external rewards like money or social approval. This internal drive is characterized by a high level of autonomy and interest, which often leads to greater persistence and a more positive overall experience in sports and physical activities.

49. (B) Self-Confidence : A stable and unchangeable personality trait
Self-confidence is the belief in one's ability to successfully perform a task. Although some individuals may be generally more confident than others, self-confidence is not a fixed, unchangeable trait. It can fluctuate based on recent performances, preparation, and psychological state. Through mental skills training and positive experiences, athletes can significantly improve their confidence levels. Understanding that confidence is dynamic allows coaches and athletes to work on building and maintaining it through systematic goal setting and mental preparation.

50. (A) Psychodynamic Theory
This theoretical approach views personality as the result of dynamic, unconscious processes and early childhood experiences that shape an individual's adult behavior. It emphasizes the importance of internal conflicts between different aspects of the psyche. In a sports context, this theory would explore how an athlete's hidden motives and past personal history might influence their current performance and reactions to pressure. This perspective offers a deep, qualitative look at the underlying psychological forces that drive an individual's unique personality.

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dispositions, while the psychodynamic view emphasizes unconscious conflicts. The humanistic perspective centers on self-actualization and personal growth, suggesting that individuals strive to reach their full potential. Finally, the situational approach highlights the powerful influence of the environment on how people act. Each of these theories contributes to a more comprehensive understanding of personality within the diverse contexts of sports and exercise.

66. (A) Extrinsic motivation
This type of motivation is driven by external rewards such as money, fame, or social approval rather than by the inherent enjoyment of the task itself. When an athlete's primary focus is on obtaining a scholarship or prize money, their engagement is controlled by outside consequences. While these rewards can be powerful motivators, they can sometimes undermine a person's long-term interest in the sport if they become the sole reason for participation. Balancing external rewards with internal satisfaction is often key to sustainability.

67. (C) Burnout
Burnout is a complex psychological syndrome characterized by emotional and physical exhaustion, a declining sense of accomplishment, and a growing negative attitude toward one's sport. It often results from chronic stress, excessive training demands, and a lack of recovery. Athletes suffering from burnout may feel that their efforts are no longer meaningful, leading to a loss of motivation and potential withdrawal from the activity. Prevention involves balancing training with adequate rest and ensuring that participation remains rewarding and personally meaningful.

68. (D) Specific, Measurable, Achievable, Relevant, Time-bound
The SMART framework provides a systematic approach to goal setting that enhances clarity and motivation. By defining specific and measurable targets, athletes can track their progress accurately. Ensuring goals are achievable and relevant keeps the performer engaged and focused on realistic outcomes. Finally, setting a clear timeframe creates a sense of urgency and commitment. This structured method helps athletes direct their efforts effectively, leading to more consistent improvements and a greater sense of accomplishment in their sporting endeavors.

69. (C) It is a complete substitute for physical practice.
Mental practice, or imagery, is a highly effective tool for enhancing skill acquisition and mental preparation, but it cannot replace physical training. Physical practice is essential for developing the necessary strength, endurance, and fine motor coordination required for athletic performance. However, when used as a supplement, mental practice can strengthen neural pathways and improve technical understanding. It is most effective when integrated into a comprehensive training program that combines both physical and mental effort to achieve optimal results and readiness.

70. (A) P, R, and S only
Modern perspectives on personality emphasize the interaction between individual traits and situational factors. Tools like Eysenck's dimensions provide a way to describe these stable traits. While personality testing offers valuable insights into behavioral tendencies, it should not be the sole factor in team selection due to the complexity of performance. Additionally, Type A personality is actually characterized by urgency and competitiveness, while the interactional approach remains the most widely accepted framework for understanding how athletes behave in sports.

71. (D) Performing
In the final stage of team development, the group has successfully navigated its initial conflicts and established clear norms and roles. The members now work together as a cohesive unit, focusing their collective energy on achieving shared goals and solving problems efficiently. At this stage, there is a high level of mutual trust and support, allowing the team to function at its highest potential. The focus shifts from interpersonal issues to task execution and the consistent delivery of high-quality results.

72. (A) Narrow-external focus
Attentional focus can be categorized by its width and direction. A narrow focus involves

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the opponent's tactics, choosing the best play in a given situation, or adjusting one's own technique during a competition. This conscious mental activity allows athletes to adapt to dynamic game conditions and make informed choices. It is a critical component of tactical expertise and overall athletic intelligence across all levels of sport.

59. (D) The effectiveness of a leader is an interaction of qualities, situation, and members.
Modern leadership theories emphasize that there is no single best way to lead in all circumstances. Instead, effective leadership depends on the complex interaction between the leader's personality and skills, the specific demands of the situation, and the characteristics and needs of the team members. A style that works well for a young team might not be suitable for elite professionals. Successful leaders are those who can adapt their approach to fit the unique requirements of their specific environment and group.

60. (A) Both A and R are true and R is the correct explanation of A.
Cognitive anxiety involves worry and negative thoughts, which can consume valuable mental resources needed for high-level decision-making. This mental interference narrows an athlete's focus and makes it difficult to process relevant information. In contrast, tasks that rely primarily on physical strength or endurance may be less affected by these mental disruptions. Therefore, managing negative thoughts is particularly crucial for athletes in roles that require complex tactical analysis and quick, accurate decisions under pressure during intense competitive situations.

61. (C) The shared commitment among members to achieve group goals.
Task cohesion represents the degree to which members of a group work together toward common performance objectives. It reflects the shared desire for team success and the collective effort put into achieving specific results. A team with high task cohesion is unified in its purpose and focused on executing the strategies necessary to win. While social bonds are also important, task cohesion is specifically centered on the group's productivity and its ability to function effectively as a competitive unit.

62. (D) Positive transfer of training
This phenomenon occurs when previously learned skills or knowledge facilitate the acquisition or performance of a new task. Because the serving motions in tennis and volleyball share similar biomechanical patterns, the athlete can apply her existing skill to the new sport, making the learning process faster and more efficient. Coaches often use this principle by sequencing training so that athletes can build upon their existing foundation, allowing for more rapid development across different activities that share common movement characteristics.

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63. (A) Changing negative self-talk into positive or productive self-talk.
Cognitive restructuring is a mental strategy used to identify and challenge irrational or negative thoughts and replace them with more constructive perspectives. By consciously changing their internal dialogue, an athlete can reduce feelings of anxiety and build self-confidence. This process helps the performer interpret stressful situations as manageable challenges rather than threats. Mastering this skill allows for greater emotional control and resilience, enabling the athlete to maintain a positive mindset even when facing difficult competitive circumstances or setbacks during performance.

64. (A) Both Statement I and Statement II are correct.
Personality is a multi-layered structure that defines how an individual uniquely interacts with the world. The psychological core represents the most fundamental and stable part of personality, encompassing an individual's basic values, beliefs, and self-concept. Because it is deeply ingrained, this core is relatively resistant to change. In contrast, other levels of personality, like role-related behaviors, are more dynamic and can change depending on the social situation. Understanding these different levels helps in explaining both consistent behavior and situational adaptations.

65. (B) P-3, Q-4, R-2, S-1
Different psychological theories offer unique perspectives on the origins of human behavior. The trait approach focuses on stable, internal

for performance, the actual act of movement is considered a motor process. Short-term memory provides temporary storage for immediate tasks, while long-term memory holds a limitless amount of information over time. Understanding these distinctions is fundamental to studying how athletes learn and store complex game information.

80. (A) Both A and R are true and R is the correct explanation of A.
The relationship between team cohesion and performance is bidirectional and reinforcing. High levels of cohesion often lead to better coordination and effort, which improves performance. Conversely, achieving success together tends to strengthen the bonds between team members and increase their commitment to shared goals, further enhancing cohesion. This cyclical process highlights the importance of fostering a positive team environment, as success and unity build upon each other to create a more effective and stable competitive unit over time.

81. (B) Understanding the goal of the task and developing strategies.
During the initial stage of motor learning, the learner's primary focus is on understanding the fundamental requirements of the skill. This phase involves a high degree of conscious thought, as the individual tries to figure out what needs to be done and how to coordinate their movements. Errors are frequent and performance is often inconsistent. The goal is to develop a basic mental blueprint of the task, which will serve as the foundation for refinement in later stages of practice.

82. (A) Self-efficacy
This concept refers to a person's belief in their ability to successfully perform a specific task in a given situation. It is a situation-specific form of self-confidence that strongly influences an athlete's choice of activities, the effort they put forth, and their persistence in the face of obstacles. High self-efficacy leads individuals to set challenging goals and maintain focus under pressure. It is built through past successes, observing others, verbal encouragement, and an accurate interpretation of physiological and emotional states.

83. (C) Anxiety
Anxiety is characterized by feelings of apprehension and tension, often accompanied by negative thoughts and physiological arousal. It is generally a non-specific emotional response to a perceived threat or high-pressure situation. In sports, it can manifest as both mental worry and physical symptoms like a racing heart. While some arousal is necessary, excessive anxiety can disrupt concentration and hinder performance. Learning to manage these feelings is a critical component of psychological preparation for athletes across all levels of competition.

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84. (B) Only Statement II is correct.
Crowd behavior significantly impacts an athlete's psychological state. While supportive cheering can boost motivation, a hostile crowd can increase pressure and anxiety for the visiting team. This increased arousal can lead to attentional disruptions, making it harder for players to focus on the game. The "home-field advantage" is partly attributed to the positive energy from home fans and the potentially debilitating effect of a negative audience on the opponents' concentration and emotional control during the competition.

85. (A) P-4, Q-2, R-3, S-1
Motivation and anxiety are key psychological factors that manifest in different ways. Intrinsic motivation involves playing for the love of the challenge, while extrinsic motivation is driven by external rewards like trophies. State anxiety is a temporary feeling of nervousness in a specific moment, such as before a major final, whereas trait anxiety is a more permanent personality characteristic where an individual often feels nervous across many situations. Understanding these distinctions helps in tailoring psychological interventions for individual athletes.

86. (B) Laissez-faire
This leadership style is characterized by a "hands-off" approach where the leader provides little direction and allows the group to make their own decisions. While this can empower highly skilled and self-motivated individuals, it can also lead to a lack of structure and coordination in many team settings. In sports, this style is rarely used by head coaches during competition but might be appropriate in specific contexts where

The goal is to help athletes build a foundation of mental skills that can be used to enhance performance, increase enjoyment, and achieve greater self-regulation during competition. Much like physical training, these mental skills must be learned and practiced over time to be effective. It is an integral part of holistic athlete development, addressing the mental demands of modern high-level sport.

102. (A) Both Statement I and Statement II are correct.
Anxiety is understood through both stable dispositions and temporary responses. Trait anxiety is a relatively permanent personality characteristic that influences how an individual generally perceives the world as threatening. In contrast, state anxiety is a transitory emotional state that occurs in response to a specific, high-pressure situation. Understanding both types is essential for sport psychologists to develop effective interventions, as an athlete's general tendency to be anxious will interact with the specific demands of a competitive event.

103. (D) Team norms
Team norms are the unwritten rules and shared expectations that guide the behavior of group members. These informal standards develop over time and influence how players interact, practice, and compete. Norms can cover everything from effort levels to off-court conduct. While not formally documented like a constitution, they have a powerful impact on group cohesion and productivity. Establishing positive, task-oriented norms is a key responsibility of team leaders and coaches to ensure the group functions effectively and harmoniously.

104. (A) "Keep my elbow in and follow through on every free throw."
Process goals focus on the specific actions and technical components an individual must execute to perform well. Unlike outcome goals, which focus on results like winning, process goals are entirely within the athlete's control. By concentrating on these specific cues, the performer can maintain better focus and reduce the anxiety associated with the final result. Setting process goals is a powerful strategy for improving technical proficiency and ensuring a more consistent and high-quality performance during practice and competitive events.

105. (B) Q, S, P, R
Group development typically follows a predictable sequence of stages. It begins with "forming," where members orient themselves. This is followed by "storming," a period of conflict as roles are established. In the "norming" stage, the group develops cohesion and shared standards. Finally, the "performing" stage is reached when the team functions effectively as a unit to achieve its goals. Understanding this progression helps leaders manage the natural challenges of group dynamics and facilitate the growth of a productive team.

106. (A) Social inhibition
Social inhibition occurs when the presence of an audience leads to a decrease in performance, particularly on complex, new, or poorly learned tasks. According to social facilitation theory, the presence of others increases arousal, which can interfere with the correct execution of skills that are not yet automatic. This phenomenon highlights why athletes may struggle when performing difficult movements in front of a large crowd. Mastering skills until they become automatic is a key strategy for overcoming this potential negative effect.

107. (D) Humanistic Theory
The humanistic approach to personality emphasizes the unique potential of each individual and the drive toward self-actualization and personal growth. It focuses on conscious experiences, self-determination, and the importance of a positive self-concept. In a sports context, this perspective encourages athletes to strive for their personal best and find meaning in their participation. This theory views humans as inherently good and motivated to reach their full potential, providing a supportive and growth-oriented framework for understanding human behavior and motivation.

108. (B) Intent of the action
The primary distinction between these two forms of aggression lies in the underlying motivation. Hostile aggression is driven by anger with the primary goal of inflicting harm or injury on another person. In contrast, instrumental aggression involves the use of force as a means to achieve a non-aggressive goal, such as gaining a strategic advantage in a game. Although both

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94. (D) Social cohesion
Social cohesion refers to the interpersonal attraction and emotional bonds between team members. When players genuinely like each other and enjoy spending time together, the team is said to have high social cohesion. This positive social environment can lead to better communication, increased support, and a more enjoyable overall experience. While task-oriented unity is also important, social cohesion contributes significantly to the long-term stability and morale of a group, making it a more resilient unit during challenging periods.

95. (A) P, Q, and R only
Concentration is the ability to maintain focus on relevant cues and is essential for avoiding performance "chokes." Nideffer's model describes this focus through dimensions of width and direction. It is incorrect to suggest that an athlete's focus should always remain narrow, as different situations require broader scanning. Additionally, focusing on past errors is a common distraction that can disrupt concentration. Maintaining a present-focused, task-relevant mindset is the key to effective concentration throughout the dynamic and changing conditions of a competition.

96. (B) Instinct Theory
This perspective suggests that aggression is an inherent part of human nature, a biological drive that builds up over time and must be released. According to this view, sports can serve as a socially acceptable outlet for this innate aggressive energy, a process known as catharsis. While this theory provides a biological explanation for aggressive behavior, it has been largely criticized for not accounting for the learned aspects of aggression and the influence of the social environment on how people behave.

97. (B) Setting unrealistically difficult goals to provide a challenge
Effective goal setting requires a balance between challenge and attainability. While goals should be demanding to motivate effort, setting them at an unrealistic level can lead to frustration, decreased confidence, and a loss of motivation. Instead, goals should follow the SMART principle—being specific, measurable, and realistically achievable within a given timeframe. By setting challenging but attainable targets, athletes can experience a sense of progress and accomplishment, which helps maintain high levels of engagement and sustained effort over time.

98. (A) The phase where the learner practices to refine the movement and reduce errors.
In the associative stage of motor learning, the learner has already understood the basic mechanics of the task and is now focused on refining their technique. This phase is characterized by a significant amount of practice aimed at making the movement more consistent and efficient. Errors become less frequent and the learner begins to develop the ability to detect and correct their own mistakes. This is often the longest stage of learning, requiring dedication and specific feedback for continued improvement.

99. (C) Autocratic Leader : Employs a command-style, directive approach
Leadership styles in sports range from directive to collaborative. An autocratic leader makes decisions independently and expects strict adherence to instructions, which can be effective in high-pressure or time-sensitive situations. In contrast, democratic leaders involve team members in the decision-making process. Prescribed leaders are those appointed by an external authority, while emergent leaders naturally rise from within the group due to their skills or influence. Each style and source of leadership has different impacts on team dynamics and performance.

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100. (D) The Inverted-U Hypothesis
This theory proposes that there is an optimal level of arousal for every individual and task that leads to peak performance. If arousal is too low, the athlete may lack the necessary energy and focus. If it is too high, it can lead to excessive tension and attentional narrowing, causing a drop in performance. The shape of the curve reflects this relationship, highlighting that more arousal is not always better and that managing one's level of activation is essential for success.

101. (C) Psychological skill training
Psychological skill training involves the systematic and consistent practice of mental techniques like goal setting, imagery, and arousal regulation.

comprehensive basis for understanding how athletes think, feel, and behave. They offer valuable tools for coaches and psychologists to analyze performance issues and develop targeted interventions to help athletes achieve their full potential.

116. (D) Social loafing
Social loafing is a phenomenon where individuals put forth less effort when working as part of a group than when they are individually accountable. This decrease in motivation often occurs because individual contributions are less identifiable in a team setting. To combat this, coaches can increase personal accountability by monitoring and providing feedback on each athlete's specific performance. Ensuring that every member feels their effort is essential to the team's success is a key strategy for maintaining high levels of engagement and productivity.

117. (C) Autogenic Training
This relaxation technique involves a series of mental exercises designed to induce sensations of warmth and heaviness in the limbs, leading to a state of deep physical and mental calm. By repeating specific verbal suggestions, an athlete can learn to influence their autonomic nervous system, reducing physiological arousal and stress. This skill is particularly useful for managing pre-competition nerves and promoting recovery. Like other mental skills, autogenic training requires consistent practice to be used effectively as a tool for self-regulation and emotional control.

118. (B) The person and the situation interacting with each other.
The interactional view is a central concept in modern psychology, suggesting that behavior cannot be understood by looking at personality traits or the environment in isolation. Instead, it is the interplay between an individual's unique characteristics and the specific demands of the situation that determines how they will act. For example, a normally calm athlete may become very aggressive in a high-stakes championship game. Recognizing this interaction allows for a more nuanced understanding of athlete behavior across different competitive contexts.

119. (D) It is only necessary for professional athletes, not amateurs.
Long-term psychological preparation is beneficial for athletes at all levels, from beginners to elite professionals. Developing foundational mental skills like self-confidence, motivation, and resilience is a gradual process that supports an athlete's overall growth and enjoyment of the sport. These skills help participants cope with the challenges of training, overcome setbacks, and maintain a positive attitude toward physical activity. Integrating mental skills training into all levels of sports programs fosters a more holistic approach to athlete development and well-being.

120. (A) P and R only
Performance is influenced by various psychological factors that can either facilitate or hinder success. Eustress is a positive form of stress that can energize and motivate, while mental practice helps refine skills and build confidence. However, over-arousal does not always lead to better results, as it can cause tension and focus issues. Furthermore, self-confidence is a positive belief in one's ability and is distinct from arrogance. Understanding these distinctions is essential for developing effective training strategies that optimize an athlete's mental state.

121. (C) Formal role
In a team setting, roles are the behaviors expected of individuals in specific positions. A formal role, such as team captain or coach, is officially assigned by the organization and carries specific responsibilities and authority. These roles provide structure and clarity within the group. In contrast, informal roles emerge naturally through social interaction. Both types of roles are important for group functioning, but formal roles define the official leadership and organizational hierarchy necessary for coordinated effort and effective decision-making during competition.

122. (A) Broad-internal
This attentional style involves focusing internally on one's own thoughts, feelings, or past experiences while maintaining a wide perspective. When an athlete reviews a video of their performance, they are mentally analyzing multiple aspects of their technique and strategy. This broad internal focus is essential for self-

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may result in harm, the intent is fundamentally different. Distinguishing between them is crucial for understanding and managing athlete behavior.

109. (C) An athlete's level of self-confidence is fixed from birth and cannot be changed.
Self-confidence is a dynamic psychological state that can be developed and strengthened through systematic training and positive experiences. While individuals may have different baseline levels of confidence, it is not a fixed trait. Athletes can build their confidence by achieving success, observing others succeed, receiving positive reinforcement, and learning to manage their emotional and physiological states. Recognizing that confidence is malleable allows for the implementation of mental skills programs designed to enhance an athlete's belief in their abilities.

110. (A) Both A and R are true and R is the correct explanation of A.
Random practice, which involves switching between different skills during a training session, is often more effective for long-term learning than blocked practice. This is because it forces the learner to constantly re-engage in the cognitive process of planning each movement, leading to deeper encoding in memory. Although performance during the practice session itself might be more inconsistent, the resulting mental blueprints are more durable and more easily retrieved in the dynamic and unpredictable conditions of actual competition.

111. (A) To achieve an optimal level of arousal and readiness for performance.
Activation techniques are designed to energize an athlete's body and mind, ensuring they have the necessary intensity and focus for the upcoming task. This process involves increasing physiological arousal and mental alertness to reach an ideal state for competition. By using strategies like upbeat music or powerful self-talk, performers can overcome feelings of lethargy or under-preparedness. Achieving this optimal level of readiness is essential for executing skills effectively and responding quickly to the demands of the sports environment.

112. (B) External, unstable
When an athlete attributes an outcome to an external factor like the weather, they are placing the cause outside of their own personal control. This factor is also considered unstable because it is a temporary, unpredictable event that may not occur in future situations. Using such attributions for failure can help protect an athlete's self-esteem by suggesting that the poor result was not due to a lack of ability or effort. However, relying too heavily on external factors can also diminish personal accountability.

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113. (B) The transfer of learning from one limb to the contralateral, unpracticed limb.
Bilateral transfer is a specific phenomenon where practicing a motor skill with one side of the body leads to improvements in the performance of that same skill on the opposite side. This occurs because the brain develops a general mental blueprint of the movement that can be applied to both limbs. Coaches use this principle to help athletes develop greater versatility, often training the dominant side first to facilitate faster learning and improved coordination when practicing with the non-dominant limb.

114. (B) Only Statement II is correct.
Human memory consists of different systems with distinct characteristics. Short-term memory has a very limited capacity, typically only holding a few items of information for a brief period. In contrast, long-term memory is a relatively permanent storage system with an almost unlimited capacity for retaining knowledge and experiences. Information must be actively processed and rehearsed to move from short-term to long-term storage. Understanding these limitations is important for designing effective instruction and training programs that promote lasting learning.

115. (B) P-3, Q-1, R-4, S-2
Various theoretical models explain key psychological factors in sports. The inverted-U hypothesis explores the relationship between arousal and performance, while achievement goal theory examines motivational orientations. The frustration-aggression hypothesis suggests that aggression stems from thwarted goals, and Nideffer's model describes different attentional styles. Together, these frameworks provide a

theory of motivation based on innate drives. In contrast, self-determination, achievement goal, and attribution theories are specifically focused on understanding the psychological processes that drive human behavior. Each of these theories offers valuable insights into why athletes participate in sports and how they react to their successes and failures.

130. (A) Both A and R are true and R is the correct explanation of A.
An interactive audience provides direct feedback and potential evaluation, which can significantly influence an athlete's psychological state. This active presence increases arousal levels more than a passive or co-acting audience would. For the performer, the awareness of being watched and judged can amplify both positive and negative emotions, affecting their focus and ability to execute skills. Understanding these social influences is important for preparing athletes to maintain their concentration and emotional control in dynamic and potentially loud competitive environments.

131. (C) Strategic thinking and planning
Thinking is a high-level cognitive process that allows athletes to analyze game situations, anticipate future events, and formulate effective plans. Creating a "game plan" or "race strategy" involves the mental manipulation of information to solve the problems presented by the competition. This strategic planning is essential for maximizing one's strengths and exploiting an opponent's weaknesses. By engaging in these complex cognitive activities, athletes can make better decisions and perform more effectively under the dynamic and unpredictable conditions of a match.

132. (D) The throwing motion learned in baseball facilitating the learning of the javelin throw.
Positive transfer occurs when previous learning helps in the acquisition of a new skill. This is most likely to happen when the two tasks share similar movement patterns, strategies, or cognitive requirements. In this case, the fundamental biomechanics of a powerful throw are similar across both activities, allowing the athlete to build on their existing foundation. Recognizing these connections is a valuable tool for coaches and educators, as it allows for more efficient training and the development of versatile athletic skills.

133. (C) Extrinsic reward (positive reinforcement)
Positive reinforcement involves providing a desirable consequence following a specific behavior to increase the likelihood of that behavior being repeated. In this example, the reward of a day off from practice is offered as an incentive for winning. While this external motivator can be effective for achieving short-term goals, coaches must be careful not to rely on it too heavily, as excessive focus on external rewards can sometimes diminish an athlete's internal drive and love for the game over the long term.

134. (A) Only Statement I is correct.
Leadership styles impact how decisions are made and how the team functions. A democratic style involves collaborative decision-making, which can increase member satisfaction and commitment. In contrast, an autocratic style involves a single leader making all the choices, which is often more efficient in high-pressure, fast-paced situations. However, complex tasks that require creativity and personal investment from the team are usually better served by a more inclusive leadership approach that encourages input and fosters a sense of shared ownership among the members.

135. (B) P-4, Q-1, R-2, S-3
Various psychological concepts in sports are understood through their relationships and contrasts. Intrinsic motivation focuses on internal satisfaction, while extrinsic motivation relies on external rewards. State anxiety is a temporary response to a specific situation, contrasting with the more stable trait anxiety. Task cohesion centers on group goals, whereas social cohesion involves interpersonal bonds. Hostile aggression aims to harm, while instrumental aggression uses force to achieve a task. Understanding these distinctions allows for more precise analysis of athlete behavior and team functioning.

136. (A) Storming
In the second stage of group development, the initial politeness of the "forming" stage often gives way to interpersonal conflict as members compete for status and influence. This "storming"

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evaluation, problem-solving, and developing a deeper understanding of one's own performance patterns. It allows the athlete to integrate various pieces of information to make improvements and plan for future training and competitive situations.

123. (D) Specific to the skill being learned.
The principle of specificity in motor learning suggests that practice is most effective when it closely mirrors the conditions and requirements of the actual task. To develop proficiency in a specific skill, an athlete must practice the exact movement patterns and decision-making processes involved. General training can support overall fitness, but technical mastery requires dedicated time on the specific activity. Designing drills that simulate game situations ensures that the skills learned in practice will transfer effectively to the dynamic and unpredictable environment of competition.

124. (B) Autonomy
Within self-determination theory, autonomy is the fundamental psychological need to feel in control of one's own actions and decisions. When an athlete feels that their participation is dictated by external rewards or pressures, their sense of autonomy is diminished. This can lead to decreased intrinsic motivation and lower overall satisfaction with the sport. Fostering a sense of autonomy by involving athletes in decision-making and providing choices helps build a more self-determined and committed individual who is motivated by personal interest and value.

125. (D) P, Q, R, S, and T
To achieve peak performance, athletes must master a variety of psychological skills. Imagery and goal setting provide direction and mental rehearsal, while positive self-talk and arousal regulation help manage emotions and maintain confidence. Concentration is essential for staying focused on relevant cues during the intensity of competition. These skills are not innate but must be systematically trained and practiced, just like physical skills. Integrating these techniques into regular training programs allows athletes to develop the mental toughness and self-regulation needed for consistent success.

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126. (D) To understand how psychology and activity interact.
The field of sport and exercise psychology focuses on the reciprocal relationship between the mind and physical activity. It explores how psychological factors, such as motivation and anxiety, influence athletic performance, and how participation in sport affects an individual's mental development and well-being. The goal is to apply scientific knowledge to enhance performance while promoting overall health and personal growth. This dual focus makes the discipline relevant to both elite athletes striving for excellence and the general population seeking the benefits of regular exercise.

127. (A) Drive Theory
Drive theory is a motivational framework that explains how internal needs create a state of tension that individuals are driven to reduce. It is not a theory of personality, which instead focuses on the fundamental traits and processes that make an individual unique. Established personality theories include the trait, type, and psychodynamic approaches, which offer different perspectives on how personality is structured and how it influences behavior across various situations. Distinguishing between motivation and personality theories is important for accurately analyzing human behavior in sports.

128. (B) Somatic state anxiety
Anxiety manifests through both mental and physical symptoms. Somatic state anxiety refers specifically to the physiological changes that occur in response to a high-pressure situation, such as a racing heart, sweating, and muscle tension. These reactions represent the body's physical response to stress. While some level of arousal is necessary, excessive somatic symptoms can interfere with the fine motor control needed for skills like archery. Learning to manage these physical responses through relaxation techniques is a key part of psychological preparation for competition.

129. (B) Inverted-U Hypothesis : Focuses on innate, instinctual drives
The inverted-U hypothesis is a model that describes the relationship between arousal and performance, suggesting that there is an optimal level of activation for peak results. It is not a

143. (A) A consistent pre-performance routine used before every competition.
Short-term psychological preparation involves the mental and physical routines an athlete uses in the immediate period leading up to a competition. A pre-performance routine is a systematic sequence of thoughts and actions that helps the performer achieve an optimal state of readiness and focus. This can include activities like specific warm-ups, imagery, or self-talk. By consistently using these routines, athletes can manage their arousal levels, block out distractions, and enter a state of mind that is conducive to peak performance and successful execution.

144. (B) Simple and well-learned tasks
Social facilitation theory suggests that the presence of an audience increases an individual's level of physiological arousal. This arousal strengthens the "dominant response," which is the most likely behavior in a given situation. For simple or highly practiced skills, the dominant response is typically the correct one, leading to enhanced performance when others are watching. However, for complex or new tasks, the dominant response is often incorrect, which is why a crowd can sometimes lead to more errors and impaired performance in those specific contexts.

145. (C) P, R, and T only
Relaxation techniques are essential for managing excessive arousal and anxiety. Methods like progressive muscle relaxation, autogenic training, and deep breathing are specifically designed to calm the body and mind by reducing tension and lowering heart rate. In contrast, fast music and activating self-talk are intended to increase arousal and energy for pre-game preparation. Choosing the correct strategy depends on an athlete's current state and their target level of activation, highlighting the need for a versatile set of mental self-regulation skills.

146. (A) A process goal orientation
A process goal orientation involves focusing on the specific technical actions and procedures required during a performance rather than just the final result. By concentrating on her stroke and breathing, the swimmer is attending to the controllable elements that will ultimately lead to a better outcome. This focus helps maintain concentration, reduces the pressure of competition, and provides a clear roadmap for execution. Athletes who prioritize process goals often experience more consistent success and a greater sense of personal mastery over their skills.

147. (C) Height and weight
Height and weight are physical or biological characteristics that can influence performance, but they are not psychological factors. Psychological factors specifically involve the mental and emotional processes that drive behavior and influence performance, such as motivation, confidence, and concentration. These internal states affect how an athlete perceives challenges and manages the pressures of competition. While physical attributes provide the foundation for athletic potential, psychological skills are what allow an athlete to maximize that potential and perform consistently at their best under varying conditions.

148. (D) Cognitive and somatic
Anxiety in sports is viewed as a multidimensional construct with both mental and physical components. Cognitive anxiety involves the negative thoughts, worries, and expectations of failure that can disrupt concentration. Somatic anxiety refers to the physiological symptoms of stress, such as muscle tension and increased heart rate. Recognizing these two components is essential for developing effective coping strategies. For example, relaxation techniques target somatic symptoms, while cognitive restructuring and positive self-talk are used to address the mental aspects of pre-competition anxiety and pressure.

149. (C) Cognitive Stage : Very few errors made
The cognitive stage is the initial phase of motor learning, where the performer is focused on understanding the basic mechanics and requirements of a new skill. Because the individual is still figuring out what to do, this stage is characterized by many errors and inconsistent performance. As the learner progresses to the associative and autonomous stages, their technique becomes more refined and automatic, leading to a significant decrease in mistakes. Therefore, frequent errors are a normal and expected part of the early cognitive learning process.

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phase is characterized by resistance to the leader and a questioning of group norms. While this period can be challenging and uncomfortable, it is a necessary step toward establishing clear roles and a more effective group structure. Successful teams are those that can navigate these conflicts constructively and move toward a more cohesive and productive state.

137. (C) Somatic response
The body reacts to perceived stress through various physiological changes, collectively known as the somatic response. These include an increased heart rate, shallower breathing, and muscle tension, which are part of the body's natural "fight-or-flight" preparation. While some level of physical arousal is beneficial for performance, excessive somatic symptoms can lead to fatigue and a lack of coordination. Learning to manage these physical signs of stress through relaxation techniques is essential for maintaining an optimal state for high-level athletic competition and skillful execution.

138. (A) Coaches should design drills that closely simulate the conditions and skills required in an actual game.
To maximize the benefit of training, practice should be as specific as possible to the requirements of the actual competition. This principle ensures a high level of positive transfer, where the skills learned in drills effectively translate to the game environment. By recreating the physical and psychological demands of the match, coaches can help athletes develop the necessary technical proficiency and decision-making abilities. This approach makes training more efficient and prepares the performer for the dynamic and unpredictable nature of competitive sport.

139. (D) Projective tests are considered highly objective and reliable for athlete selection.
Personality assessment in sports involves various methods, but they are not without limitations. Standardized inventories like the 16PF provide useful data, but they must be interpreted cautiously and compared to appropriate norms. Projective tests, which require individuals to interpret ambiguous stimuli, are often criticized for their lack of objectivity and consistency. Because personality is only one factor in performance, it should never be the sole basis for selecting athletes. Understanding personality is better used for improving communication and tailoring training rather than as a definitive selection tool.

140. (C) P, Q, and R only
Group cohesion is a dynamic and essential process that reflects the tendency for a group to remain united. It consists of both social cohesion, focused on interpersonal attraction, and task cohesion, focused on shared performance goals. High levels of cohesion are generally associated with better communication, increased commitment, and improved team functioning. While it does not guarantee victory, it provides a strong foundation for collective effort. Teams that work together effectively and maintain positive social bonds are more likely to achieve their goals and handle challenges.

141. (C) Resilience
Resilience is the psychological capacity to adapt successfully to adversity, trauma, or significant stress. In a sports context, it involves the ability to bounce back from losses, injuries, or poor performances and maintain a focused and positive attitude. Resilient athletes view challenges as opportunities for growth and are more likely to persist in the face of obstacles. This characteristic can be developed through mental skills training and supportive environments, providing the inner strength needed to sustain a long and successful career in competitive athletics.

142. (D) Kinesthetic imagery (a form of internal imagery)
Kinesthetic imagery involves the mental rehearsal of the physical sensations associated with a movement, such as the feeling of a perfect swing or the tension in the muscles. This internal perspective allows the athlete to focus on the timing and coordination of their actions. By vividly imagining the physical feel of a successful execution, the performer can strengthen the neural pathways and mental blueprints required for the task. This technique is highly effective for refining technique and building the confidence needed for precise performance.

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athletes are expected to take complete personal responsibility for their preparation.

87. (D) Imagery / Mental Practice
This psychological skill involves the systematic use of the mind to create or recreate sensory experiences. By vividly imagining herself performing a routine, the gymnast can mentally rehearse the movements, build confidence, and prepare for the emotions of competition. Imagery allows athletes to practice skills without physical fatigue and can be used to refine technique or prepare for specific game scenarios. It is most effective when it incorporates multiple senses, including the feeling of movement and the visual environment.

88. (A) When a previously learned skill has no effect on the learning of a new skill.
Zero transfer occurs when two tasks are so different that the skills and knowledge required for one do not influence the performance of the other. For example, the techniques and rules of swimming have no relevant connection to the strategies used in chess. In such cases, the learner must start from scratch with the new activity. Identifying where transfer is unlikely to occur helps coaches understand that training in one area will not necessarily lead to improvements in unrelated domains.

89. (C) Athletes should strive to eliminate all emotions to perform well.
Emotions are a natural and unavoidable part of the competitive experience, and attempting to eliminate them entirely is neither realistic nor necessarily beneficial. Positive emotions like joy and excitement can enhance motivation and energy, while even negative emotions can sometimes be channeled productively if managed correctly. The key is emotional regulation—learning to stay within an optimal emotional range that allows for focused and effective performance. Athletes should focus on understanding and controlling their emotional responses rather than suppressing them.

90. (B) Q, R, and S only
Motivation in sports is complex, influenced by both internal traits and the external environment. Achievement goal theory highlights how athletes focus on either personal improvement or beating others. Attribution theory emphasizes how explaining failure through stable, internal traits can damage future motivation. Intrinsic motivation actually involves engaging in an activity for its own sake rather than for external rewards. Understanding these principles helps coaches create environments that foster high levels of engagement and a more positive approach to challenges and setbacks.

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91. (D) Stress and Anxiety
The "fight-or-flight" response is a basic survival mechanism that occurs when an individual perceives a threat. This physiological reaction prepares the body to either face the challenge or escape from it, involving the release of hormones like adrenaline. In a sports context, this response is triggered by the pressures of competition, leading to symptoms like increased heart rate and muscle tension. Managing this natural stress response is crucial for ensuring that an athlete remains focused and capable of high performance.

92. (B) Activation through self-talk
Self-talk is a versatile mental skill used to direct focus and regulate arousal. By using short, powerful cue words like "power" or "explode," an athlete can trigger a surge of energy and mental readiness just before a demanding physical task. This form of internal dialogue serves to activate the body and mind, helping the performer achieve the necessary intensity for the effort. It is an effective strategy for maintaining high levels of motivation and confidence during critical moments of performance.

93. (C) Maintain information in short-term memory and transfer it to long-term memory.
Rehearsal involves the repeated mental or physical processing of information to keep it active in one's mind. This process is essential for moving information from temporary short-term storage into more permanent long-term memory. In sports, an athlete might rehearse a play or a technical instruction to ensure it is deeply ingrained and can be easily retrieved during a game. Without this systematic repetition, new information is likely to be quickly forgotten, hindering the learning and development process.

150. (B) Democratic style
A democratic leadership style is characterized by collaboration and shared decision-making. By consulting with team members and valuing their input, the leader fosters a sense of empowerment and commitment within the group. This approach can lead to higher member satisfaction and better team cohesion, as individuals feel they have a stake in the outcome. While it may take more time than autocratic methods, the democratic style is often more effective for building a positive team culture and encouraging personal growth and long-term engagement.

151. (D) To analyze situations, make decisions, and formulate strategies.
Thinking is a fundamental cognitive process that enables athletes to engage in complex mental activities like problem-solving and strategic planning. It involves the conscious manipulation of information to adapt to the dynamic demands of competition. By thinking critically, an athlete can evaluate an opponent's tactics and choose the best course of action in real-time. This mental agility is essential for high-level performance, allowing the performer to go beyond simple motor execution and respond intelligently to the varied challenges of their sport.

152. (A) Only Statement I is correct.
Mental practice, or imagery, is a versatile tool that can be used by athletes at all levels to enhance skill acquisition and performance. It is most effective when the mental images are vivid, incorporating all the senses, and when the athlete can control the images to ensure successful outcomes. While elite performers often use more sophisticated imagery, beginners can also benefit significantly by visualizing basic movement patterns. Systematic use of imagery helps build mental blueprints and confidence, making it a valuable addition to any training program.

153. (C) Stress involves a perceived imbalance between demand and capability.
Stress is a process that occurs when an individual perceives a significant gap between the demands of a situation and their own ability to meet those demands, especially when the consequences of failure are important. Anxiety is the emotional response to this perceived stress, often characterized by worry and physiological arousal. Understanding stress as a transactional process highlights the importance of an athlete's subjective appraisal of a situation. Developing coping skills can help athletes reframe demands as manageable challenges rather than overwhelming threats.

154. (A) The flat-racket swing learned in squash interferes with learning the topspin swing in tennis.
Negative transfer occurs when previously learned habits or skills make it more difficult to acquire a new, similar task. In this example, the specific motor patterns required for squash conflict with the different requirements of a tennis stroke, causing interference. Identifying such potential conflicts is crucial for effective instruction. Coaches can help athletes by emphasizing the differences between the tasks and providing specific feedback to help the learner differentiate and master the new movement patterns without being hindered by old habits.

155. (A) Q, S, R, P
Effective goal setting follows a systematic process starting with the identification of specific and measurable targets. This is followed by securing the athlete's commitment to these goals, ensuring they are personally meaningful. Next, specific strategies and action plans are developed to achieve the targets. Finally, the process involves regular evaluation and feedback to monitor progress and make any necessary adjustments. This structured approach provides direction, enhances motivation, and helps athletes stay focused on their long-term development and performance objectives.

156. (B) Psychological resilience
Resilience is the capacity to successfully adapt to stress and adversity. In sports, it involves having the inner strength and social support needed to overcome setbacks and maintain a high level of performance. Resilient athletes are characterized by their ability to stay focused and positive even when facing challenges like injury or defeat. This mental toughness is a critical factor in long-term success, helping individuals navigate the inevitable ups and downs of a competitive career while remaining committed to their personal and athletic goals.

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cognitive and motor components of the task. Imagery is most effective when it is vivid and controllable, allowing the athlete to practice skills and strategies in their mind, which builds confidence and prepares them for the demands of competition.

211. (C) Memory
Memory is the fundamental cognitive process that allows individuals to encode, store, and later retrieve information. For a quarterback, this ability is essential for remembering complex plays and strategic game plans designed by the coaching staff. Without an effective memory system, learning and applying technical and tactical knowledge would be impossible. Memory provides the database of information that informs thinking and decision-making during the fast-paced and dynamic conditions of a game, making it a critical factor in achieveing elite-level athletic expertise and performance.

212. (D) The competitive result of an event (e.g., winning).
Outcome goals focus on the final results of a performance, such as winning a championship or achieving a specific ranking. While these goals can provide long-term direction and motivation, they are often not within the athlete's direct control, as they depend on the performance of opponents and other situational factors. To achieve consistent success, it is often beneficial to balance outcome goals with process and performance goals, which focus more on individual effort and technical execution, providing a greater sense of personal control.

213. (C) Anxiety
Anxiety is a negative emotional state characterized by subjective feelings of apprehension and tension, often accompanied by physiological arousal. In a sports context, it typically occurs in response to high-pressure or evaluative situations, such as an upcoming important match. This mental worry can disrupt concentration and hinder the execution of well-learned skills. Learning to manage these feelings through mental skills training is a critical part of psychological preparation, helping athletes achieve an optimal mental state for consistent and high-level performance.

214. (D) Both statements are incorrect.
Group cohesion is a multidimensional concept consisting of two primary types. Task cohesion refers to the degree to which team members work together toward common performance goals, such as winning a game. Social cohesion, on the other hand, refers to the interpersonal attraction and emotional bonds between members, reflecting how much they like each other. Both are important for team functioning, but they focus on different aspects of unity. Understanding these distinctions allows coaches to implement strategies that build both technical coordination and social support.

215. (B) P-4, Q-1, R-3, S-2
Psychological skill training utilizes various techniques to address different mental needs. Self-talk is used to modify thoughts and boost confidence. Imagery allows for mental rehearsal of skills and scenarios. Arousal regulation helps athletes manage their levels of activation and anxiety to reach an ideal state. Goal setting provides clear direction and enhances motivation. Together, these tools form a comprehensive program that helps performers become more self-regulated and consistent, leading to improved performance and greater satisfaction in their sporting endeavors.

216. (A) The Trait Theory
The trait approach to personality suggests that individuals possess stable, internal characteristics that predispose them to behave in consistent ways across different situations. These traits, such as extraversion or conscientiousness, are seen as the fundamental units that make an individual unique. Within this framework, personality is relatively fixed and can be measured through various inventories. While this view provides a useful way to describe individual differences, modern psychology also emphasizes the powerful role of the environment and situational factors in shaping human behavior.

217. (C) Increased social loafing
High group cohesion is generally associated with many benefits, including better communication, increased commitment, and improved team stability. Cohesive teams often show greater individual effort as members feel more accountable to each other. In contrast, social

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factor in achieving consistent performance in high-pressure athletic events.

164. (D) Both statements are incorrect.
In cognitive psychology, different processes have distinct functions. Thinking involves the mental manipulation of information to solve problems, make decisions, and develop strategies. Memory, on the other hand, is the system responsible for encoding, storing, and later retrieving information from past experiences. While they are closely related, they are not interchangeable. Thinking uses stored memories to inform future actions, while memory provides the necessary database for those cognitive activities. Understanding these specific roles is essential for studying how athletes learn and perform complex tasks.

165. (B) P-4, Q-3, R-2, S-1
Mental training involves a variety of techniques designed to optimize an athlete's psychological state. Mental practice uses imagery to rehearse skills, while goal setting provides specific targets for improvement. Activation techniques are used to raise arousal to an ideal level, and relaxation strategies help lower excessive tension and anxiety. Together, these tools help performers achieve an optimal state of mind for competition. Consistent practice of these skills is just as important as physical training for achieving long-term athletic success and emotional well-being across all levels of sport.

166. (B) Complex or the player feels pressure, causing over-arousal.
Social facilitation theory suggests that the presence of an audience increases arousal, which can impair performance on complex or newly learned tasks. This "social inhibition" occurs because the high arousal can interfere with the precision and decision-making required for difficult skills. Additionally, the perceived pressure of being evaluated by a large crowd can lead to over-analysis of well-learned movements, a phenomenon that disrupts automatic performance. Helping athletes manage their arousal and focus in high-pressure environments is a key goal of psychological preparation for elite competition.

167. (D) Listening to fast-paced, upbeat music
Activation techniques are designed to increase physiological and psychological arousal to prepare an athlete for the high intensity of competition. Energetic music is a common and effective way to raise heart rate, enhance mood, and increase mental alertness. These strategies help a performer move from a state of low energy or calmness to the ideal level of readiness for action. Conversely, deep breathing and relaxation methods are used to lower arousal, highlighting the need for athletes to choose the right mental tool for their specific needs.

168. (A) Genetic predisposition
The cognitive-affective stress model views stress as a process involving the situational demand, the individual's cognitive appraisal of that demand, and the subsequent physiological and behavioral responses. It focuses on how an athlete perceives and reacts to environmental pressures. While genetics can influence baseline personality, the model specifically examines the dynamic interaction between the person and the situation. Understanding this process is key to developing stress management interventions, as changing an athlete's appraisal or physical response can significantly improve their ability to cope with competitive demands.

169. (C) Group dynamics are static and do not change over a season.
Group dynamics are the fluid and evolving behavioral processes that occur within a team. Far from being static, these dynamics change constantly as team members interact, roles are negotiated, and the group faces the challenges of the season. Factors like leadership behavior, team success, and interpersonal conflicts all influence the group's functioning over time. Understanding this dynamic nature allows coaches to actively manage the team environment, fostering a positive culture and resolving issues as they arise to maintain cohesion and high-level performance.

170. (D) P, Q, R, and S
Anxiety is a complex psychological factor with multiple dimensions. Trait anxiety is a stable personality disposition, while state anxiety is a temporary response to a specific situation. Furthermore, anxiety manifests both mentally, through cognitive worry and negative thoughts,

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leading to improved results and a more positive overall experience at all levels.

184. (B) Only Statement II is correct.
Social loafing is a phenomenon where individuals put forth less effort when working in a group, and it is a common challenge in team sports rather than individual ones. This decrease in motivation often occurs when personal contributions are hidden within the collective effort. To combat this, coaches can increase individual identifiability by monitoring specific performances and providing personal feedback. Making every member's contribution visible ensures that individuals feel personally accountable for the team's success, which is a key strategy for maintaining high levels of effort and engagement.

185. (B) P-3, Q-4, R-1, S-2
Different leadership styles are suited for different athletic situations. An autocratic style is effective for quick tactical decisions during a game, while a democratic approach is better for long-term planning with mature players. Laissez-faire leadership may work for highly independent experts, and transformational leadership is ideal for inspiring a long-term vision in developing athletes. Recognizing these situational demands allows coaches to adapt their behavior effectively. Matching the leadership style to the specific needs of the team and the task is essential for maximizing performance and group satisfaction.

186. (A) Achievement Motivation Theory (Need Achievement Theory)
This theory views motivation as a balance between an individual's desire to achieve success and their tendency to avoid failure. It suggests that high achievers are motivated by the challenge of moderate risks and the pride of accomplishment, while low achievers are more concerned with minimizing shame and often choose either very easy or very difficult tasks. Understanding these underlying motives helps coaches tailor their approach to different athletes, providing the right balance of challenge and support to foster a more positive and persistent achievement-oriented mindset.

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187. (D) Automatic processing to controlled, conscious processing
"Choking" under pressure often occurs when an athlete attempts to consciously control a movement that has already become automatic through extensive practice. This shift from "autopilot" to "manual control" disrupts the fluid and efficient execution of the skill, a phenomenon known as paralysis by analysis. High-pressure situations can trigger this over-thinking, leading to errors and a drop in performance. Mental skills training aims to help athletes maintain their focus on external cues and trust their well-learned motor programs, ensuring they can perform automatically even under stress.

188. (B) Systematically developing mental skills like confidence over months and years.
Long-term psychological preparation involves the steady and consistent development of foundational mental skills over an extended period. This process is similar to physical conditioning, where gradual effort leads to significant improvements in resilience, motivation, and self-confidence. By integrating mental skills training into their regular routine, athletes can build the mental toughness needed for high-level competition. This proactive approach ensures that the individual is psychologically prepared not just for a single event, but for the ongoing challenges of an entire athletic career.

189. (C) Spectators' influence on performance is uniform across all athletes and situations.
The impact of an audience on athletic performance is highly variable and depends on many factors. While the presence of others can increase arousal and facilitate well-learned tasks, it can also cause social inhibition and errors on complex or new skills. Additionally, individual differences in personality and the level of crowd support or hostility play a significant role. Therefore, the effect of spectators is not uniform, and athletes must learn to manage their psychological response to the presence of others to maintain consistent performance in diverse environments.

190. (D) P, Q, R, and S
Transfer of training is a fundamental concept describing how previous learning influences new skill acquisition. Positive transfer occurs

broad dimensions of human personality: openness, conscientiousness, extraversion, agreeableness, and neuroticism. These traits are used to describe stable individual differences across many situations. While aggressiveness can be a behavioral trait, it is not one of the five core dimensions defined by this specific model. Understanding these five primary factors helps researchers and coaches gain a broad and consistent understanding of an athlete's typical behavioral tendencies and psychological profile in various social and competitive contexts.

178. (A) Collective concentration and strategic execution
In team sports, effective performance requires not just individual focus but also collective concentration on shared goals and tactics. By reminding the team of their defensive responsibilities and the need for communication, the coach is directing their attention toward the critical cues needed for successful coordination. This intervention helps maintain the team's mental alignment and ensures that every player is focused on executing the game plan effectively. Building this shared awareness is a key factor in achieving cohesive and successful group performance under the pressure of competition.

179. (C) Outcome Goal : To keep my elbow high during the swim stroke
Outcome goals focus on the final results of a competition, such as winning or achieving a specific rank. In contrast, process goals focus on the specific technical actions and procedures an athlete must perform during the activity. Keeping an elbow high is a technical instruction and is therefore a process goal, not an outcome goal. Understanding the difference between these types of goals is essential for creating a balanced and effective goal-setting program that addresses both the results and the necessary steps for success.

180. (A) Both A and R are true and R is the correct explanation of A.
Goal-setting research consistently shows that specific and challenging targets lead to higher levels of performance than vague intentions. This is because well-defined goals provide a clear focus for attention, motivate greater effort, and encourage the development of effective strategies. By setting difficult but realistic targets, athletes are pushed to reach their potential while still maintaining a sense of attainability. This systematic approach transforms general desires into concrete actions, leading to more consistent progress and achievement in training and competitive athletic settings.

181. (C) Intrinsic feedback
Intrinsic feedback is the sensory information that a performer naturally receives during and after the execution of a movement. This includes visual, auditory, and proprioceptive cues, such as the feel of a solid tennis shot or the balance during a gymnastics routine. This internal information is essential for self-evaluation and error correction. As athletes become more skilled, they develop a better ability to interpret these cues, allowing for more automatic and precise performance. Intrinsic feedback is the foundation of all motor skill learning and technical mastery.

182. (B) A process involving an imbalance between situational demand and response ability.
Stress is viewed as a dynamic process that occurs when an individual perceives a significant gap between the demands of a task and their own capabilities to meet those demands, especially when the outcome is important. This subjective appraisal determines the intensity of the stress response. Understanding stress as a process rather than just a feeling or a situation highlights the importance of developing mental coping strategies. By building self-confidence and improving task-relevant skills, athletes can reframe stressful demands as manageable challenges and perform more effectively.

183. (D) Teach athletes how to enhance performance through mental skills.
Sports psychology provides the systematic study and practical application of mental techniques to help athletes achieve their potential. While it cannot guarantee victory, it offers tools like goal setting, imagery, and arousal regulation to improve focus, confidence, and resilience. These skills are essential for managing the pressures of competition and ensuring consistent performance. By integrating mental training with physical preparation, athletes can develop a more holistic and effective approach to their sport,

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197. (C) Reflex action
Psychological skill training involves the systematic and consistent practice of mental techniques like concentration, self-confidence, and arousal regulation. These skills are learned and can be improved with effort over time. In contrast, reflex actions are innate, involuntary physical responses that are hard-wired into the nervous system and do not require conscious training. While reflexes are important for some athletic responses, the focus of sports psychology is on the cognitive and emotional skills that allow an athlete to control their mental state and execute voluntary actions more effectively.

198. (B) High cognitive anxiety and arousal can lead to a sudden drop in performance.
The catastrophe model predicts that the relationship between arousal and performance depends on an athlete's level of cognitive anxiety. When worry is low, the relationship follows a typical inverted-U curve. However, when cognitive anxiety is high, even a slight increase in physiological arousal beyond the optimal point can cause a sudden and dramatic drop in performance, a "catastrophe." This suggests that managing both mental worry and physical arousal is critical for avoiding a major breakdown under high-pressure competitive conditions in sports.

199. (D) Group Dynamics : The forces that operate within a group
Group dynamics involve the complex interactions, behavioral processes, and psychological forces that occur within and between groups. This includes how members influence one another, how roles and norms develop, and how the team works together toward goals. Understanding these forces is essential for fostering a positive team culture and achieving cohesive performance. In contrast, social loafing involves putting forth less effort, and group norms are often informal rather than written. Task cohesion is centered on shared goals, while social cohesion involves interpersonal friendships.

200. (A) To teach athletes systematic mental practice to improve performance and enjoyment.
A psychological skill training (PST) program focuses on helping athletes develop mental techniques such as goal setting, imagery, and relaxation to enhance their athletic performance and overall satisfaction. These programs are designed for all participants, not just those with clinical issues. By learning to self-regulate their mental states, athletes can become more consistent and resilient under pressure. Much like physical training, PST involves the regular and systematic practice of skills to achieve long-term growth and success in both competitive and non-competitive sports environments.

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201. (C) Long-term memory
Long-term memory is the system responsible for the relatively permanent storage of information and experiences. Unlike short-term memory, which has a limited capacity and duration, long-term memory can hold a vast amount of data over years or even a lifetime. In sports, this allows athletes to retain complex plays, technical skills, and strategic knowledge learned through extensive practice and experience. Information must be actively encoded and rehearsed to move into this system, where it can then be retrieved and applied during various competitive situations.

202. (C) Both Statement I and Statement II are correct.
In sports psychology, it is important to distinguish between aggression and assertiveness based on intent. Aggression is defined as any behavior, physical or verbal, directed toward the goal of harming another living being. Assertiveness, on the other hand, involves the use of legitimate physical force or forceful actions within the rules of the game, but with no intention of causing harm. Understanding these definitions helps in analyzing athlete behavior and developing training programs that encourage intense, competitive play while discouraging harmful or illegal conduct.

203. (D) Broad-external
This attentional style involves scanning a wide area of the external environment to gather information and make strategic decisions. In team sports like soccer, a player must simultaneously track the positions of teammates and opponents across the field to find an open passing lane. By maintaining this expansive external focus, the athlete can process multiple moving cues and respond effectively to the dynamic nature of the game. This ability is essential for successful

when existing skills facilitate new learning, while negative transfer happens when old habits interfere. Zero transfer means there is no relationship between the tasks. The extent of these effects depends on the degree of similarity between the movements and strategies involved. Understanding these principles allows coaches to sequence training effectively, maximizing the benefit of prior experiences and minimizing potential interference, leading to more efficient and comprehensive skill development.

191. (A) Flow
Flow is a psychological state characterized by total absorption in an activity, leading to a loss of self-consciousness and a feeling of effortless control. Often called being "in the zone," this state occurs when the challenge of the task perfectly matches the athlete's skill level. In flow, performance becomes automatic and intrinsically rewarding. Achieving this state is a goal for many athletes, as it represents peak psychological and physical functioning. Fostering the right conditions, such as clear goals and high focus, can increase the likelihood of experiencing flow.

192. (B) Augmented (extrinsic) feedback
Augmented feedback is the additional information provided by an external source, such as a coach or a video, to supplement a performer's own sensory information. It is essential for learning and correcting complex movements that an athlete might not be able to fully sense themselves. This information can focus on the results of the action or the specific technical aspects of the performance. By providing accurate and timely augmented feedback, coaches help athletes refine their skills more quickly and achieve a higher level of technical proficiency and consistency.

193. (B) Behavior is a result of the interplay between personality traits and the situation.
The interactional approach is the most widely accepted perspective in modern psychology, suggesting that human behavior is determined by the combination of an individual's unique personality and the specific environmental context. A person's stable traits provide a baseline, but the demands and opportunities of the situation can significantly influence how those traits manifest. For example, a normally quiet athlete may become a vocal leader in a championship game. Recognizing this interplay allows for a more accurate understanding of behavior across different athletic and competitive settings.

194. (A) Emotions are intense reactions to events, while moods are diffuse and longer lasting.
Emotions are typically brief, intense psychological states that occur in response to specific events, such as the joy of winning or the anger of a foul. In contrast, moods are more general and enduring emotional states that do not necessarily have a clear cause. While both can influence an athlete's focus and motivation, moods provide a persistent background that can affect overall well-being and performance over several days. Understanding these differences helps athletes and coaches manage their emotional states effectively during training and competition cycles.

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195. (B) Q, R, and T only
Self-determination theory identifies three fundamental psychological needs that drive intrinsic motivation: autonomy, competence, and relatedness. Autonomy is the need to feel in control of one's actions; competence is the need to feel effective in one's environment; and relatedness is the need for social connection. When these needs are met, individuals are more likely to participate for internal satisfaction and personal growth. In contrast, focusing on external factors like money or fame can undermine this natural drive. Fostering an environment that supports these needs is key to long-term engagement.

196. (D) Contingency model of leadership
This model suggests that there is no single best way to lead; instead, the most effective leadership style is contingent upon the specific situation and the characteristics of the followers. Factors such as the leader's personality, the complexity of the task, and the degree of authority all influence which style will work best. For example, a task-oriented leader might be most effective in very favorable or very unfavorable conditions, while a relationship-oriented leader excels in moderate situations. This approach emphasizes the need for leaders to be flexible and adaptive.

157. (C) The principle of reinforcement
The principle of reinforcement states that behaviors followed by positive consequences are more likely to be repeated in the future. In sports, this involves using rewards like praise, recognition, or tangible prizes to encourage desired efforts and skills. Conversely, removing unpleasant stimuli can also strengthen behavior. By systematically applying these principles, coaches can shape athlete behavior and maintain high levels of motivation. It is important to balance external reinforcement with the development of internal drive to ensure long-term commitment and satisfaction.

158. (D) A sequence of task-relevant thoughts and actions an athlete systematically engages in prior to performance.
A pre-performance routine is a personalized mental and physical sequence designed to prepare an athlete for the immediate demands of competition. It helps the performer achieve an optimal state of arousal, increase focus, and build confidence before the action begins. By following a consistent routine, athletes can create a sense of control and predictability, which reduces the impact of pre-game nerves and external distractions. This structured preparation is a key component of short-term psychological readiness across many different types of sports.

159. (A) Motivation can be influenced by both internal factors (e.g., personality) and external factors (e.g., rewards).
Motivation is a complex and dynamic force driven by both personal characteristics and situational influences. An athlete's own needs, goals, and personality traits interact with the coaching environment, social support, and available rewards to determine their level of effort and persistence. Understanding this interaction is essential for creating an atmosphere that fosters high engagement. Coaches can enhance motivation by addressing individual needs while also manipulating external factors, such as the climate of the training session, to encourage a more positive and committed mindset.

160. (A) Both A and R are true and R is the correct explanation of A.
There is no single leadership style that is effective in all sports situations. Instead, a leader must be adaptable, choosing an approach that fits the specific needs of the task and the team members. For example, a directive, autocratic style may be necessary during intense game moments, while a more collaborative, democratic approach is better for long-term planning with experienced athletes. This contingency perspective emphasizes that effective leadership is an ongoing interaction between the leader's behavior, the situational context, and group characteristics.

161. (B) Hostile aggression
This form of behavior is characterized by the primary intent to cause physical or psychological harm to another person. It is often driven by anger or frustration in response to a perceived provocation. In this example, the player's action is directed at the opponent with the goal of inflicting injury rather than achieving a game-related objective. Hostile aggression is generally considered unacceptable in sports and is often penalized. Managing these emotional outbursts through self-regulation is a key focus of psychological training for athletes.

162. (A) Trait approach
The trait approach to personality focuses on identifying and measuring the fundamental, relatively stable characteristics that define an individual across various situations. These traits, such as extraversion or neuroticism, are seen as the basic building blocks of personality. By understanding an athlete's core traits, coaches and psychologists can better predict their typical behavioral tendencies and emotional reactions. While this approach provides a useful way to describe individual differences, it is often combined with other perspectives to account for the powerful influence of the situation on behavior.

163. (C) High self-efficacy
Self-efficacy is an individual's belief in their ability to successfully perform a specific task in a given situation. When a cricket batsman feels confident against a particular bowler, he is demonstrating high self-efficacy for that specific challenge. This belief is a powerful motivator that influences the effort he will put forth and his resilience if he faces difficulties. High self-efficacy is built through past success, observing others, and positive self-talk, and it is a critical

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playmaking and tactical awareness during fast-paced, complex competitive situations.

204. (B) The principle of specificity
The principle of specificity states that the most effective way to learn a skill is to practice it under conditions that closely resemble the actual performance environment. This includes the physical movement patterns, the cognitive decision-making requirements, and the psychological pressure of competition. By aligning training with these specific demands, coaches ensure a high degree of positive transfer. This approach makes practice more relevant and helps athletes develop the precise skills and mental toughness needed to succeed in their specific sport or competitive situation.

205. (A) Q, R, P
Hollander's model describes personality as having three levels with varying stability. Role-related behavior is the most dynamic level, as it changes based on social situations. Typical responses are how an individual generally reacts to the environment. The psychological core is the most stable and internal level, representing an individual's fundamental values and self-concept. Understanding these layers helps explain why people might act differently in different contexts while still maintaining a consistent core personality. This framework is useful for analyzing athlete behavior across various competitive and social settings.

206. (D) Extrinsic motivation (introjected regulation)
Introjected regulation is a form of extrinsic motivation where an individual participates in an activity to avoid negative internal feelings, such as guilt or shame, or to gain self-approval. While the source of pressure is internal, the behavior is not fully autonomous because it is driven by external standards rather than personal interest or enjoyment. This type of motivation can lead to increased stress and lower overall satisfaction. Fostering a more self-determined form of motivation is generally more beneficial for long-term health and well-being.

207. (A) To help them recognize and control unwanted tension and anxiety.
Relaxation training aims to provide athletes with the skills needed to manage their physiological and psychological responses to stress. By learning to identify and reduce excessive muscle tension and mental worry, performers can achieve an optimal state of arousal for competition. These techniques help prevent the physical fatigue and mental disruptions that can occur with high levels of anxiety. Mastering relaxation skills allows for greater emotional control and resilience, enabling the athlete to maintain a calm and focused mindset even in high-pressure situations.

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208. (B) Orientation, familiarization, and assessing the group task.
The first stage of group development involves members coming together for the first time. During this "forming" phase, individuals are focused on getting to know each other, understanding their roles, and assessing the goals of the group. It is often characterized by polite behavior and a reliance on the leader for direction as the team begins to establish its initial identity. This period of orientation is necessary for creating the basic structure and connections needed for the group to progress through more challenging stages.

209. (B) Its primary and sole focus is on treating clinical depression in athletes.
While sports psychologists can help athletes with mental health issues, the field as a whole has a much broader focus. It primarily involves the study and application of psychological principles to enhance athletic performance and understand how participation in physical activity influences overall psychological development. This includes topics like motivation, confidence, leadership, and team dynamics. The goal is to optimize both the mental well-being and the competitive excellence of participants, making it relevant for everyone from recreational exercisers to elite professional athletes.

210. (A) Both A and R are true and R is the correct explanation of A.
Mental practice, or imagery, is a powerful tool for enhancing performance because it triggers the same neural pathways as physical practice. By visualizing a movement, athletes can produce low-level neuromuscular activation that helps refine the actual physical execution. This creates a mental blueprint that improves the

and physically, through somatic symptoms like muscle tension. All four components are essential for a complete understanding of how anxiety affects an athlete. Developing a variety of mental and physical coping strategies allows performers to manage these different aspects of anxiety effectively during training and competitive events.

171. (D) The ability to direct and maintain focus on relevant cues.
Concentration is a fundamental psychological skill that involves focusing on task-relevant information while ignoring irrelevant distractions. It is essential for achieving peak performance across all sports. This ability to stay present and mentally engaged allows athletes to process information effectively and make accurate decisions. Concentration can be improved through systematic training, such as using cue words and pre-performance routines. Maintaining focus throughout the changing demands of a competition is a hallmark of elite performance and mental toughness in any high-level athletic endeavor.

172. (B) External, unstable
Attributing a performance outcome to luck involves identifying a cause that is outside of one's personal control and is temporary or unpredictable. According to attribution theory, this is an external and unstable explanation. Relying on such factors can protect an athlete's ego after failure, but it may also decrease their sense of personal agency after success. Encouraging athletes to focus on controllable, stable factors like their own effort and skill development is generally more effective for building long-term motivation and a healthy sense of personal accountability.

173. (C) The development of cohesion and shared norms.
In the third stage of group development, the team moves beyond its initial orientation and conflicts. Members begin to develop a sense of unity and establish shared standards of behavior and performance. This "norming" phase is characterized by increased cooperation, mutual support, and a clearer understanding of individual roles. As cohesion grows, the group becomes more effective and better prepared to work together toward common goals. This transition is essential for establishing the foundation of trust and collaboration needed for the final stage of high-level performance.

174. (D) External imagery
External imagery involves visualizing a performance from the perspective of an outside observer, similar to watching oneself on a video or from the stands. This viewpoint is particularly useful for analyzing technique and understanding how a movement looks from the outside. It allows the athlete to see the overall flow and coordination of their actions. While internal imagery focuses on the feel of the movement, external imagery provides a valuable tool for error detection and refining the aesthetic and technical aspects of a performance.

175. (C) P, Q, R, and S only
Sports psychology offers essential tools for enhancing performance and mental well-being in all types of physical activity. It helps athletes manage the pressures of competition, improve communication with coaches, and develop key mental skills like confidence and focus. These principles are equally applicable to both individual and team sports, providing a foundation for collective effort and individual excellence. Understanding that mental skills can be trained like physical ones encourages a more holistic and effective approach to preparation and long-term athletic development at all levels.

176. (B) Biofeedback
Biofeedback is a psychological skill training technique that uses electronic instruments to provide athletes with real-time information about their physiological processes, such as heart rate or muscle tension. By becoming aware of these involuntary functions, individuals can learn to control their body's response to stress. This self-regulation is valuable for achieving an optimal state of arousal for performance. Through consistent practice, athletes can use these internal cues to achieve relaxation or activation without the need for the device, making it a powerful tool for mental and physical control.

177. (B) Aggressiveness
The "Big Five" model is a prominent framework in personality psychology that identifies five

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loafing—the tendency to put forth less effort in a group—is typically reduced when cohesion is high. While strong unity can sometimes lead to increased conformity, the overall impact of cohesion on team functioning and individual motivation is positive, creating a more resilient and productive competitive unit.

218. (A) Trait anxiety
Trait anxiety is a relatively stable personality disposition that influences how an individual generally perceives various situations as threatening or stressful. Someone high in trait anxiety is more likely to experience intense state anxiety even in situations with low objective threat. This general tendency to worry and feel nervous across different contexts can significantly impact an athlete's preparation and performance. Recognizing high trait anxiety is important for developing long-term mental strategies that help the individual manage their overall level of apprehension and build resilience.

219. (D) Massed practice is always superior to distributed practice for all skills.
Motor learning principles emphasize the importance of practice, feedback, and motivation. Learning is defined as a relatively permanent change in behavior resulting from experience. While practice is essential, massed practice (long sessions with little rest) is not always better. In fact, distributed practice (shorter sessions with rest intervals) is often more effective for learning many skills, as it reduces fatigue and allows for better focus. Tailoring the practice structure to the specific skill and the learner's needs is key to maximizing improvement.

220. (A) P, Q, and R only
Achievement goal theory explores how athletes define success and failure. Task-oriented individuals focus on personal mastery and improvement, while ego-oriented individuals focus on demonstrating superior ability compared to others. Coaches can foster a positive "mastery climate" by emphasizing effort and growth. While extrinsic rewards like trophies can sometimes decrease intrinsic motivation, this is not always the case; it depends on how the rewards are perceived. Creating an environment that prioritizes task goals and personal development is essential for fostering long-term engagement and enjoyment.

221. (C) Progressive Muscle Relaxation
This relaxation technique focuses on helping athletes develop a physical awareness of the difference between muscle tension and a relaxed state. By systematically tensing and then releasing specific muscle groups throughout the body, an individual can learn to identify and alleviate unwanted physical stress. This skill is particularly useful for managing the somatic symptoms of anxiety, such as excessive tightness, which can hinder fluid movement. Consistent practice of this technique allows the performer to achieve an optimal physical state for competition and recovery.

222. (D) Zero transfer
Zero transfer occurs when the learning of one skill has no effect, either positive or negative, on the acquisition of another skill. This typically happens when the two activities share no common elements, such as movement patterns, strategies, or cognitive requirements. For example, knowing how to swim does not provide any relevant benefit or hindrance to learning how to play chess. Identifying where transfer is unlikely helps coaches understand that training in one domain will not automatically lead to improvements in unrelated areas of performance.

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223. (A) A behavioral process of influencing individuals and groups towards set goals.
Leadership in sports is a dynamic process where an individual guides others to achieve shared objectives. It involves much more than just being a skilled player; it requires communication, motivation, and the ability to organize collective effort. Effective leaders can influence the team's culture, cohesion, and performance through their behavior and decision-making. Whether appointed or emerging naturally, leaders play a critical role in managing group dynamics and ensuring that all members are focused and committed to the team's long-term success.

224. (B) Self-confidence or self-efficacy
This concept refers to an athlete's belief in their ability to successfully execute the actions required for a specific task. Self-efficacy is a situational form of confidence that significantly influences

as the sport's nature and the athletes' maturity. Different situations may require either a more directive or a more collaborative approach to be successful. Therefore, the best leaders are those who can adapt their style to meet the specific needs of their team and environment.

286. (D) To encode, store, and retrieve information about movements and strategies.
Memory plays a crucial role in sports by allowing athletes to encode, store, and retrieve information about movement patterns, rules, and strategies. It enables the recall of previously learned techniques, such as specific footwork or play sequences, during competition. Without efficient memory processes, athletes would struggle to apply their training or make informed decisions based on their past experiences and learned skills.

287. (C) The autonomous stage
The autonomous stage of motor skill learning is reached when a movement becomes automatic and requires very little conscious thought. At this level, an athlete can perform the skill fluently while focusing their mental energy on higher-level strategies or environmental cues. This transition allows for peak performance, as the technical execution of the skill no longer demands significant cognitive attention during play.

288. (B) understanding the nature of the task and how to perform it.
During the cognitive stage of learning, the participant is primarily focused on understanding the task and figuring out the basic requirements of the movement. This initial phase requires high levels of conscious thought and attention to instructions or demonstrations. Errors are frequent as the learner attempts to develop a mental framework for the skill, making external feedback and guidance highly important.

289. (D) Solving problems and making decisions during play.
Thinking in a sports context involves the mental manipulation of stored information to solve problems and make decisions during competition. It allows athletes to evaluate situations, anticipate opponent actions, and formulate effective strategies on the fly. This cognitive process is essential for navigating the dynamic and unpredictable nature of play, ensuring that physical skills are applied intelligently to achieve desired outcomes.

290. (A) The associative stage
The associative stage of motor skill learning involves refining movement patterns through practice and gradually reducing errors. During this phase, the athlete understands the basic task but must consciously focus on correcting specific technical elements to improve consistency. Performance becomes more fluid as the individual begins to internalize the skill, though it still requires significant attention to detail and repetitive practice.

291. (C) The effect that learning one skill has on the learning of a different skill.
Transfer of training describes how the learning or performance of one skill influences the acquisition of another. This concept is fundamental to motor learning and helps in designing efficient training schedules. Depending on the relationship between the skills, the impact can be helpful, harmful, or non-existent. Understanding these effects allows for a more logical and effective progression in athletic skill development.

292. (A) Positive transfer.
Positive transfer occurs when the skills or knowledge gained from learning one task facilitate the learning of a second, similar task. For example, similar movement patterns or coordination requirements can make transitioning between certain sports much easier. Recognizing these connections helps coaches sequence training activities to take advantage of existing skills, thereby accelerating the learning process for new and related athletic techniques.

293. (D) When two skills have similar cues but require different responses.
Negative transfer is most likely to happen when two different skills share similar environmental cues but require distinct motor responses. This conflict can confuse the learner, as the familiar setting triggers an incorrect movement pattern. Athletes must be made aware of these subtle differences to minimize the interference between the two skills and ensure that learning one does not hinder another.

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231. (D) practical application
Sports psychology is a discipline that combines scientific research with the practical application of knowledge to improve athletic performance and overall health. It is not just about theory; it focuses on providing athletes and coaches with concrete tools like goal setting and imagery to achieve their goals. By translating research findings into actionable mental training programs, professionals can help individuals across all levels of sport and exercise achieve better results and a more positive and fulfilling psychological experience.

232. (A) Both intrinsic and extrinsic motivation
Many athletes are driven by a combination of internal and external factors. Intrinsic motivation involves participating for the inherent enjoyment and challenge of the activity itself. Extrinsic motivation involves pursuing external rewards such as scholarships, money, or social status. These two types of motivation can coexist and influence an athlete's effort and persistence. While internal drive is often more sustainable, external rewards can also provide powerful incentives. Balancing these different motivational sources is key to maintaining long-term commitment and high performance in sports.

233. (C) Encoding
Memory is a multi-stage process that begins with encoding, which involves converting sensory information into a form that can be stored in the brain. Once information is encoded, it can be maintained through storage and later retrieved when needed. In sports, encoding occurs when an athlete processes a new technical instruction or a strategic game plan. Effective encoding is crucial for successful learning, as information that is not properly processed and meaningful will not be accurately retained in the long-term memory system.

234. (B) Only Statement II is correct.
The "home-field advantage" is a well-documented phenomenon that is influenced by multiple factors beyond just familiarity with the venue. Crowd support can boost the home team's motivation and energy while potentially increasing pressure on the visiting team. Additionally, travel fatigue for the away team and subtle psychological biases in refereeing can also play a role. Understanding these diverse influences helps coaches and athletes prepare for the unique psychological and physical challenges of playing in different environments and in front of different audiences.

235. (B) P-3, Q-1, R-4, S-2
Key psychological concepts in sports are defined by their unique roles in performance. Personality is the blend of characteristics that make a person unique. Motivation involves the direction and intensity of effort toward a goal. Anxiety is a negative emotional state characterized by worry and tension. Group cohesion is the tendency for a team to remain united in pursuit of shared objectives. Understanding these fundamental definitions is essential for analyzing athlete behavior and developing effective mental training programs that address both individual and group needs.

236. (B) manipulative; storage
While both are essential cognitive processes, thinking and memory serve different functions. Thinking involves the mental manipulation of information to reason, solve problems, make decisions, and develop strategies. In contrast, memory is primarily concerned with the encoding, storage, and retrieval of information from past experiences. In sports, an athlete uses their memory to access strategic knowledge and then uses thinking to apply that information to the current, dynamic situation in the game. Together, these processes allow for intelligent and adaptive performance.

237. (C) Aggression is always a direct result of frustration.
This theory proposes that aggression occurs when an individual's efforts to reach a goal are blocked, leading to feelings of frustration. This frustration then creates an internal drive that must be released through aggressive behavior. In sports, this might happen when a player is losing or feels they are being treated unfairly. While this model provides an important link between emotions and actions, modern views also recognize that social learning and situational factors play a major role in determining how an individual responds to frustration.

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and personal development. By studying these variables, researchers identify how mental factors directly influence physical results and overall athlete success.

252. (A) Prescribing specific dietary plans for peak performance.
While sports psychology addresses various mental factors like motivation, confidence, and concentration, it does not typically involve creating clinical dietary protocols or nutritional plans. Such tasks fall under the expertise of sports nutritionists or dietitians. Psychological interventions focus primarily on mental strategies and emotional regulation to enhance performance and manage the psychological stresses of competition.

253. (C) promoting long-term engagement in physical activity and developing life skills.
In physical education, the application of psychological principles goes beyond athletic success to foster long-term physical activity participation. It helps students develop critical life skills such as resilience, discipline, and teamwork. By creating positive learning environments, sports psychology ensures that participants at all levels gain personal growth and maintain a healthy interest in exercise.

254. (D) It is applicable to individuals at all levels of sport and physical activity participation.
Sports psychology is not limited to professional or elite athletes but applies to participants across all levels of physical activity. Whether individuals are school children, recreational enthusiasts, or high-performance competitors, psychological principles remain relevant. The field provides a systematic framework for improving the experiences of everyone involved in sport, regardless of their competitive status or skill.

255. (C) mental aspects are a fundamental component of athletic development and performance.
Viewing sports psychology as integral implies that mental preparation is a fundamental component of athlete development rather than a minor addition. Success requires a balance of physical skill and psychological strength to reach peak performance levels. Mental aspects are deeply woven into the fabric of training, proving necessary for achieving consistent results and comprehensive athletic growth.

256. (B) To direct, energize, and maintain athletic behaviour.
Motivation acts as the essential internal or external drive that guides and sustains an athlete's efforts toward achieving specific objectives. It provides the energy necessary to engage in rigorous training and maintain persistence during setbacks. Without this foundational force, athletes would lack the direction and consistency required to perform effectively and reach their full competitive potential.

257. (D) Intrinsic motivation
Intrinsic motivation describes the internal drive derived from the inherent satisfaction and enjoyment of the activity itself. This includes the personal pride felt during skill mastery or the sheer joy of participation without needing external rewards. Such motivation is strongly linked to long-term commitment and persistence, as the reward is the activity and personal improvement achieved.

258. (A) It can diminish an athlete's internal drive to participate.
While external rewards can boost effort in the short term, relying too heavily on them may undermine an individual's internal drive. When athletes focus solely on trophies or social recognition, their inherent enjoyment of the sport can decrease. This imbalance often leads to reduced long-term persistence once the external incentives are no longer available or sufficiently motivating.

259. (C) autonomy, competence, and relatedness.
Self-determination theory emphasizes the critical psychological needs of autonomy, competence, and relatedness as the basis for motivation. Autonomy involves feeling in control of actions, while competence refers to the sense of mastery in skills. Relatedness focuses on the connection to others. Meeting these needs encourages more sustainable and internalized forms of motivation in athletic contexts.

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245. (B) P, Q, R, and S only
Group dynamics involve the complex and interdependent forces that operate within a team. This includes the development of cohesion, shared norms, and both formal and informal roles. A common challenge is social loafing, where individual effort decreases due to a lack of perceived accountability. Members of a group are not independent; instead, they interact and exert mutual influence on each other to achieve common goals. Understanding these components is essential for effectively managing team performance and fostering a positive and productive group environment across various athletic settings.

246. (B) The cognitive rehearsal of a physical skill in the absence of overt physical movements.
Mental practice, often used interchangeably with imagery, is a psychological skill where an athlete vividly rehearses a movement or a strategy in their mind without any actual physical effort. By visualizing the sensations and successful completion of a task, the performer can strengthen the mental blueprints and neural pathways required for the actual execution. This technique is highly effective for refining technical skills, building confidence, and preparing for the emotional demands of competition, serving as a powerful and versatile supplement to physical training.

247. (D) Self-regulated and consistent in their performance
The ultimate goal of psychological skill training is to help athletes develop the ability to monitor and control their own mental and emotional states. By mastering techniques like goal setting and arousal regulation, performers can achieve an optimal state for competition regardless of external circumstances. This self-regulation leads to greater consistency and mental toughness, allowing the individual to perform at their best under pressure. Building these internal resources empowers the athlete to take ownership of their own preparation and performance, fostering long-term athletic success and personal growth.

248. (A) Augmented feedback about the result (Knowledge of Results)
Knowledge of results is a type of augmented feedback that provides the performer with information about the outcome of their action in relation to the goal. In this case, the coach is informing the archer about where the arrow landed. This external information is essential for error detection and correction, particularly for skills where the result might not be immediately obvious. By providing accurate knowledge of results, coaches help athletes understand their current performance level and make the necessary adjustments to improve their technical precision and consistency.

249. (C) Understanding an athlete's personality can help a coach communicate more effectively with them.
While personality is not a perfect predictor of success, it provides valuable insights into an athlete's behavioral tendencies and preferences. By understanding an individual's traits, such as their level of extraversion or conscientiousness, a coach can tailor their communication and leadership style to better meet the athlete's needs. This personalized approach can improve the relationship between coach and performer, leading to more effective training and a more positive and supportive environment. Personality is one factor that interacts with skills and situations to influence overall performance.

250. (A) A mountaineer who climbs a peak for the sense of challenge and accomplishment.
Intrinsic motivation involves engaging in an activity for the inherent pleasure, satisfaction, and personal growth it provides rather than for some external reward. When an individual participates in a sport because they love the process and the sense of mastery it offers, they are being driven by internal factors. This type of motivation is characterized by a high degree of interest and self-determination, which often leads to greater persistence and a more positive and fulfilling overall experience in both recreational and competitive athletic activities.

251. (B) The relationship between psychological factors and sports performance.
Sports psychology focuses on the complex interaction between psychological states and athletic performance. This field applies mental principles to help athletes manage training demands and competitive pressure. Beyond performance, it addresses holistic well-being

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motivation, effort, and persistence. High levels of belief in one's capability lead performers to set challenging goals and maintain focus even in the face of setbacks. It is built through past accomplishments, observing successful peers, verbal encouragement, and a positive interpretation of physiological states, making it a critical factor in athletic achievement.

225. (D) P, Q, R, and T only
Psychological preparation is a multi-layered process that occurs across different timeframes. Long-term preparation involves the steady development of foundational mental skills like confidence and resilience over time. Short-term preparation focuses on the immediate mental routines, such as pre-performance sequences, used just before and during competition. Both are essential for achieving consistent results. Neglecting long-term development can make short-term strategies less effective. A holistic approach that integrates both long- and short-term mental training ensures that an athlete is fully prepared for the demands of high-level performance.

226. (A) Arousal and Performance
The inverted-U hypothesis is a fundamental model in sports psychology that describes the relationship between a person's level of physiological and psychological activation and the quality of their performance. It suggests that there is an optimal level of arousal where performance is at its peak. If arousal is too low, the athlete may be under-motivated; if it is too high, it can lead to tension and focus issues. This hypothesis emphasizes the importance of managing one's mental and physical state for success.

227. (C) Emotional
Nideffer's model of attentional style describes concentration across two main dimensions: width (broad to narrow) and direction (internal to external). A broad focus allows an athlete to scan the environment, while a narrow focus zero's in on a single cue. An internal focus is directed toward thoughts and sensations, while an external focus is on the environment. While emotions can certainly affect focus, they are not a dimension of the attentional style itself. Understanding these categories helps athletes develop the specific focus needed for different tasks.

228. (D) The learning process and potential temporary negative transfer
The process of learning a new skill is often non-linear and can involve periods of temporary performance decline. In this case, the swimmer is adjusting to a new technique, which might conflict with her old, well-learned habits—a phenomenon known as negative transfer. As she continues to practice, the new skill will eventually become more efficient and automatic, leading to an overall improvement in speed. This scenario highlights the importance of persistence and patience during the refinement phase of motor skill acquisition.

229. (C) Situational Approach : Emphasizes that personality traits are the sole determinant of behavior
The situational approach to personality actually emphasizes the opposite—it suggests that environmental factors and the specific context are the primary determinants of how an individual behaves. In contrast, the trait approach focuses on stable, internal dispositions. Modern psychology generally favors an interactional view, which considers both personal traits and the situation as important co-determinants. Recognizing the powerful influence of the environment helps explain why athletes might act differently depending on whether they are in practice, a minor game, or a major championship.

230. (A) Both A and R are true and R is the correct explanation of A.
High self-confidence is a powerful psychological asset that influences many aspects of performance. Athletes who believe in their abilities are more likely to set challenging goals and persist longer through difficulties. This positive belief system also helps them maintain better concentration and stay emotionally stable under pressure. Furthermore, confident individuals are more likely to interpret pre-competition arousal as a positive sign of readiness rather than a threat. Together, these factors create a mental environment that is highly conducive to consistent and peak athletic achievement.

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260. (A) The interaction between them is complex and influences an athlete's long-term commitment.
The relationship between internal drives and external rewards is intricate and significantly impacts an athlete's long-term engagement. These two types of motivation often coexist and interact to shape a person's willingness to endure training pressures. Understanding this dynamic interplay allows for better support strategies that maintain an athlete's commitment while balancing the influence of various motivational factors.

261. (D) complex, short-lived states involving feelings, arousal, and behaviour.
Emotions are defined as complex and transient states that involve physiological changes, subjective feelings, and specific expressive behaviours. These states occur in response to particular events during athletic activity and can be either beneficial or harmful to performance. Unlike long-term personality traits, emotions are short-lived reactions that vary in intensity depending on the athlete's personal interpretation.

262. (B) Constantly worrying about making a mistake.
Cognitive anxiety specifically refers to the mental components of the stress response, characterized by negative thoughts and apprehension. It manifests as constant worrying about performance outcomes or the potential for making mistakes during competition. Unlike the physical symptoms of stress, this form of anxiety focuses on the psychological burden and mental distractions that can disrupt an athlete's focus.

263. (C) The effect of an emotion depends on its type, intensity, and interpretation.
The influence of emotions on performance depends on factors such as their nature, intensity, and how the athlete perceives them. While some emotions facilitate better results, others may hinder physical execution. Successful performers learn to interpret their feelings in ways that support their goals, acknowledging that both positive and negative emotions can impact their ability to succeed under pressure.

264. (D) An optimal level of performance is often associated with a moderate level of anxiety.
The relationship between anxiety and athletic performance is non-linear, meaning that moderate levels of arousal can actually be beneficial. While excessive worry is detrimental, some degree of tension prepares the body for action and optimal functioning. Therefore, achieving peak performance often involves finding a balance where anxiety is managed at a level that enhances rather than disrupts performance.

265. (A) regulate their emotional and anxiety levels to an optimal state.
A vital skill for elite athletes involves the regulation of emotional states and anxiety to reach an ideal level for performance. Being able to manage these feelings allows individuals to remain effective under high pressure. Successful competitors distinguish themselves by their capacity to maintain composure and adjust their internal arousal, ensuring they stay focused and capable during critical moments.

266. (B) A behaviour with the intent to harm another individual.
Aggression in a sports context is defined as any behaviour intended to cause physical or psychological harm to another person. It involves a deliberate goal to injure or mistreat a living being who wishes to avoid such treatment. This definition excludes assertive play within the rules, focusing specifically on the intent behind the action to cause actual harm or injury.

267. (B) Instrumental aggression.
Instrumental aggression occurs when an aggressive act is performed as a means to achieve a specific goal, rather than to inflict injury. In this case, the primary objective is tactical success, such as preventing a score, while the intent to harm is absent. This type of behaviour is often viewed as more acceptable within the competitive framework of many sports.

268. (A) situational demands and an athlete's ability to cope.
Stress arises in sports when an individual perceives that the situational demands exceed their personal ability to cope. This imbalance creates a stress response involving psychological and physiological changes. When the consequences

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238. (D) Short-term psychological preparation for performance
Short-term psychological preparation involves the mental and physical routines used immediately before and during a competition to achieve an ideal state of focus and readiness. A pre-shot routine is a classic example, as it helps the athlete achieve consistent focus and manage arousal levels for each individual effort. By following a systematic sequence of thoughts and actions, the performer can block out distractions and maintain a calm, confident mindset, which is essential for the successful execution of skills under pressure.

239. (A) Aggression and assertiveness are identical concepts in sport.
It is crucial to distinguish between aggression and assertiveness based on the underlying intent. Aggression involves the goal of causing physical or psychological harm to others. Assertiveness, however, involves the use of legitimate force and intense effort within the rules of the game, but with no intention of inflicting injury. While both may appear forceful, their psychological nature is fundamentally different. Promoting assertive, competitive play while discouraging harmful aggression is a key responsibility for coaches and sports organizations in fostering a positive environment.

240. (A) P, Q, and R only
Leadership in sports can come from different sources and take various forms. Prescribed leaders are officially appointed, while emergent leaders rise from within the group due to their skills or influence. Effective leadership is not about a single "best" style, but rather an ongoing interaction between the leader's personality, their behaviors, and the specific situational context. An autocratic style is not always the best; a successful leader is one who can adapt their approach to meet the unique needs of their team and environment.

241. (B) Motivation driven by the need for relatedness
According to self-determination theory, relatedness is a fundamental psychological need that involves the desire to feel connected to and valued by others. When an individual joins a team primarily for the social bonds and friendships it provides, they are being driven by this internal need for social connection. Meeting this need can significantly enhance intrinsic motivation and long-term commitment to the sport. Fostering a supportive team environment where athletes feel a sense of belonging is essential for promoting overall satisfaction and personal growth.

242. (A) Freed up to focus on game strategy and external cues.
In the final, autonomous stage of motor learning, the execution of a skill has become so deeply ingrained that it requires little to no conscious thought. This automaticity is a major advantage because it allows the athlete to shift their limited attentional resources away from the mechanics of the movement and toward higher-level cognitive tasks. The performer can now focus on scanning the environment, analyzing the opponent's tactics, and making quick, strategic decisions, leading to more intelligent and effective overall performance.

243. (C) Cognitive state anxiety
Cognitive state anxiety refers to the mental component of anxiety that occurs in response to a specific, high-pressure situation. It is characterized by negative thoughts, worry about performance, and difficulty focusing on relevant information. In this example, the tennis player's fear of double-faulting is a typical cognitive response to the threat of making a mistake at a critical moment. Managing these negative expectations through mental skills like positive self-talk is essential for maintaining a focused and confident mindset during intense competitive situations.

244. (D) Cognitive restructuring or reframing
This mental technique involves identifying negative or irrational thoughts and consciously replacing them with more positive and productive ones. By reframing a threat as a challenge, an athlete can reduce feelings of anxiety and build self-confidence. This process helps the performer maintain a more constructive mindset and stay focused on their preparation and effort rather than on the potential for failure. Cognitive restructuring is a powerful tool for self-regulation, enabling athletes to maintain emotional control and resilience even under the high pressures of competition.

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277. (D) a combination of their personality traits and the specific situation.
The interactional approach suggests that behaviour results from the combination of an individual's innate personality traits and the specific situational context. It acknowledges that athletes may act differently depending on environmental pressures or team dynamics. This perspective is highly valued in sports psychology because it considers both the person and the environment when explaining why athletes behave in certain ways.

278. (B) The interactional approach
The interactional approach is widely favoured in sports psychology because it accounts for the complexity of human behaviour in athletic settings. It recognizes that neither traits nor situations alone fully explain an athlete's actions. By considering how personal dispositions interact with external factors like competitive pressure, this perspective offers a more comprehensive understanding of performance and conduct in diverse sports environments.

279. (C) To gain understanding for developing better coaching strategies.
Measuring an athlete's personality is primarily intended to gain a deeper understanding of the individual to improve coaching strategies and psychological interventions. It is not used to definitively predict success or screen out participants. Instead, these assessments help coaches communicate more effectively and create training environments that align with the athlete's specific needs, ultimately fostering better development and performance.

280. (D) Trait theory.
Trait theory focuses on stable and enduring dispositions that influence an individual's behaviour across various situations. Characteristics such as introversion, extroversion, and neuroticism are considered innate parts of the personality structure. This perspective suggests that these fixed qualities provide a consistent foundation for how an athlete interacts with their environment, regardless of the specific circumstances or the nature of competition.

281. (A) the tendency for a group to unite in pursuit of its goals.
Group cohesion describes the tendency of a team to remain united and work together toward common goals or the satisfaction of member needs. It involves a collective commitment that keeps the group functioning as a single unit during challenges. This unity is essential for team success, as it ensures that individual efforts are aligned with the overall objectives of the organization.

282. (B) Task cohesion and social cohesion.
Cohesion within a group is multidimensional, consisting of both task and social components. Task cohesion refers to how well members work together to achieve specific performance goals. Social cohesion involves the quality of interpersonal relationships and attraction among group members. Both dimensions are important, though task cohesion is more directly linked to the coordination and effort required for successful team outcomes.

283. (B) The leader makes decisions independently without consulting the group.
An autocratic leadership style is characterized by a leader who makes decisions independently and maintains total control over the group. This approach does not typically involve consulting team members or encouraging their participation in the decision-making process. While it can provide clear direction and quick action, its effectiveness often depends on the maturity of the athletes and the specific situational needs.

284. (A) better coordinated effort and team performance.
High levels of task cohesion are strongly associated with improved team performance and better coordination among members. When a team shares a clear commitment to their collective goals, they work more efficiently together. This coordinated effort reduces conflict regarding objectives and ensures that everyone is focused on the necessary steps to achieve success, leading to more consistent and satisfying results.

285. (C) The effectiveness of a leadership style depends on the context and the athletes.
The effectiveness of a leadership style is not universal but depends on various factors such

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of failing to meet these demands are significant, the resulting pressure can disrupt performance. Effective stress management involves bridging the gap between perceived challenges and available resources.

269. (C) The fear of failure in a critical match.
Stressors are the factors that trigger a stress response, such as the fear of failure during a critical match. These triggers can also include external pressures like crowd noise or internal conflicts with teammates. Identifying these stressors is essential for athletes, as they represent the specific demands that can create an imbalance and negatively impact their performance and mental focus.

270. (D) The primary intention behind the aggressive act.
The fundamental distinction between hostile and instrumental aggression lies in the primary intent behind the act. Hostile aggression is driven by the desire to cause injury or pain to an opponent. In contrast, instrumental aggression uses the act as a tool to reach a non-aggressive goal, such as winning. Understanding this intent helps differentiate unsportsmanlike conduct from strategic play.

271. (C) a realistic belief in one's capacity to perform successfully.
Self-confidence is characterized by an athlete's realistic belief and expectation regarding their ability to successfully execute specific skills or tasks. It is not a display of arrogance but a firm conviction rooted in preparation and past success. This mental state helps athletes persevere through challenges and remain composed, providing the psychological foundation necessary for consistent and effective athletic performance.

272. (B) The ability to focus on relevant cues and ignore distractions.
Concentration in sports involves the ability to stay focused on relevant cues while ignoring irrelevant distractions. It requires sustaining attention over time and shifting focus as situational demands change. Both internal thoughts and external factors like crowd noise can disrupt this state. Maintaining high concentration ensures that athletes process only the information necessary for successful performance and decision-making during play.

273. (D) A performance goal
Performance goals focus on achieving specific personal standards or benchmarks, such as reaching a certain percentage or time. Unlike outcome goals, which focus on winning, these objectives are more within an athlete's control and allow for progress monitoring. Setting performance goals helps build confidence by providing clear, measurable targets that reflect individual improvement and technical proficiency throughout a season.

274. (A) It helps them maintain composure and persevere through difficulties.
High levels of self-confidence positively influence an athlete by helping them maintain composure under pressure and persevere through setbacks. Confident individuals are more likely to set challenging goals and remain committed during difficult training periods. This belief in one's capacity acts as a protective factor against the negative effects of stress, allowing for more consistent and effective athletic execution.

275. (C) direct effort, track progress, and build confidence.
The primary purpose of setting goals is to provide direction for effort, monitor personal progress, and build confidence through achievement. By establishing clear and measurable objectives, athletes can structure their training and stay motivated. This systematic approach allows for better focus during competition and helps individuals stay on track toward reaching their ultimate performance potential in a organized manner.

276. (A) A unique and relatively stable pattern of thoughts, feelings, and behaviours.
Personality refers to the unique and relatively stable pattern of thoughts, feelings, and behaviours that define an individual over time. These characteristics influence how an athlete typically reacts to different training and competitive environments. Understanding these enduring traits provides coaches with valuable insights into an athlete's psychological makeup, helping them tailor their support and training methods to better suit each individual.

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294. (B) Zero transfer.
Zero transfer, also known as neutral transfer, happens when learning one skill has no measurable effect on the learning of another. This usually occurs because the two activities are completely unrelated and share no common elements, movement patterns, or cognitive strategies. For instance, physical skills used in one activity may provide no benefit or hindrance when learning a purely mental task.

295. (C) To structure training sessions to maximize positive and minimize negative transfer.
Coaches should understand the transfer of training to structure sessions that maximize positive effects and minimize negative interference. By sequencing skills from simple to complex and highlighting differences between conflicting movements, they can optimize the learning process. This strategic approach to training ensures that athletes build upon their existing abilities efficiently, leading to faster skill acquisition and better overall performance.

296. (D) Systematically building resilience and self-confidence over a season.
Long-term psychological preparation involves the systematic development of mental skills over an extended period. This includes building a strong foundation of resilience and self-confidence through consistent practice and goal setting. Unlike immediate pre-game routines, these strategies focus on cultivating a robust mental state that supports an athlete throughout their career, helping them handle various challenges and maintain high performance levels consistently.

297. (A) elevate an athlete's arousal to an optimal level for performance.
Activation techniques are psychological tools used to increase an athlete's arousal to an optimal level for competition. Methods such as using upbeat music or positive self-talk help prepare the mind and body for peak effort. By reaching the right state of readiness, athletes can ensure they are sufficiently energized and focused to meet the physical and mental demands of their sport.

298. (B) relaxation technique.
Relaxation techniques are employed by athletes to lower excessive anxiety and physical tension before or during a competition. Practices like deep breathing, progressive muscle relaxation, and meditation help calm the nervous system. By reducing over-arousal, these methods allow performers to regain focus and maintain composure, ensuring that stress does not interfere with their technical execution or decision-making abilities.

299. (B) can have either a positive or negative impact on performance.
Social facilitation refers to how the presence of spectators can influence an athlete's performance in either a positive or negative way. While some individuals thrive under the energy and support of a crowd, others may feel increased pressure that hinders their ability to succeed. Understanding this phenomenon helps athletes develop strategies to manage the impact of an audience on their performance.

300. (A) the period immediately leading up to a competition.
Short-term psychological preparation focuses on the mental strategies used in the period immediately leading up to a competition. This includes pre-event routines, visualization, and managing immediate anxiety or arousal levels. The goal is to ensure the athlete is mentally ready for the specific event at hand, providing the focus and emotional control needed for successful execution in the coming moments.

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achieved and provides a basis for curriculum improvement.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

16. What is the primary purpose of creating an integrated programme for boys and girls in physical education?
(A) To reduce the number of teachers required.
(B) To promote gender equity, mutual respect, and social skills.
(C) To ensure boys and girls compete against each other in all contact sports.
(D) To focus the curriculum only on activities where there are no physical differences.

17. Which of the following represents a role of the private sector in the promotion of sports and physical education?
(A) Setting national curriculum standards for public schools.
(B) Sponsoring sports events, teams, and establishing private academies.
(C) Granting degrees in physical education.
(D) Enacting national policies for sports development.

18. Which of the following statements accurately describes the comparative nature of professional preparation in physical education?
(A) Russia's system historically emphasized mass participation and sports for all, linked to state objectives.
(B) The UK's system is identical to the USA's, with no discernible differences.
(C) India has not developed any professional courses and relies entirely on foreign-trained personnel.
(D) Germany's "Turnverein" movement had no impact on the development of its modern physical education system.

19. A physical education curriculum for differently-abled pupils should primarily be based on the principle of:
(A) Total exclusion from any form of competitive team activities.
(B) A single, uniform program applied to all types of disabilities.
(C) Adaptation and modification of activities to ensure participation and safety.
(D) Focusing exclusively on the theoretical and historical aspects of sports.

20. Consider the following statements regarding the impact of technology in physical education:
I. It can be used for performance analysis through video feedback.
II. It aids in monitoring physiological data like heart rate.
III. It can make learning more engaging through gamification.
IV. It completely replaces the need for a human teacher or coach.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I, II, and III only
(C) II and IV only
(D) I, II, III, and IV

21. What is the fundamental concept of a 'time-table' in the context of a physical education curriculum?
(A) A record of the best timings in athletic events.
(B) A list of deadlines for submitting practical records.
(C) A structured schedule that allocates specific times for various activities and classes.
(D) A historical timeline of sports.

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22. A recent government policy in India for promoting physical education would most likely focus on:
(A) Reducing the time allocated for physical education in schools.
(B) Integrating sports and fitness into the daily school routine.
(C) Banning all competitive sports at the school level.
(D) Privatizing all school-level physical education departments.

23. Which of the following is an incorrect pair regarding the curriculum content for different educational levels?
(A) Primary Level - Unstructured play and fun games.

directly to the Vice-Chancellor.
(B) A system primarily managed by student-led sports clubs.
(C) An ad-hoc committee formed only during inter-university tournaments.
(D) A structured department with a Head/ Director, professors, and other faculty.

8. All of the following are core principles of curriculum planning in physical education EXCEPT:
(A) Rigidity and unchangeability
(B) Child-centeredness
(C) Scientific foundation
(D) Community relevance

9. Identify the correct pair concerning the study of professional preparation in physical education.
(A) Germany - Emphasis on a highly centralized, state-controlled sports system.
(B) UK - A system focused exclusively on traditional indigenous games.
(C) USA - A diverse system with emphasis on scholastic and collegiate sports.
(D) Australia - A system where professional preparation is not formally recognized.

10. Match List I with List II regarding personnel roles and educational levels.
List I : (Role)
P. Focus on fundamental motor skills and movement exploration.
Q. Introduction to specific sports rules and team strategies.
R. Specialization in sports science, coaching, and research.
S. Balancing academic pressures with advanced sports participation.
List II : (Level)
1. Higher Education Level
2. Secondary Education Level
3. Primary Education Level
4. College Level
(A) P-3, Q-2, R-1, S-4
(B) P-1, Q-2, R-3, S-4
(C) P-3, Q-4, R-1, S-2
(D) P-2, Q-3, R-4, S-1

11. The scope of physical education personnel extends to the promotion of wellness. What does 'wellness' primarily encompass in this context?
(A) The absence of physical injury only.
(B) Achieving peak athletic performance in a single sport.
(C) The ability to follow a specific dietary regimen.
(D) A holistic state of well-being, including physical, mental, and social dimensions.

12. Which of the following best defines a 'credit system' in the context of professional physical education courses?
(A) A system for ranking students based on their athletic achievements.
(B) A method for quantifying the workload of a course based on hours of study.
(C) A financial aid program for deserving athletes.
(D) A method for evaluating the infrastructure of a physical education college.

13. Which of the following is NOT a direct role of a government agency monitoring professional courses in physical education?
(A) Prescribing minimum standards for infrastructure.
(B) Granting recognition to institutions offering degrees.
(C) Conducting the final examinations for individual students.
(D) Specifying the framework for curriculum and syllabus.

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14. A key qualification for a physical education professional at the higher education level is:
(A) A basic certificate in physical training.
(B) Experience playing a sport at the national level, with no academic requirement.
(C) Proficiency in primary school teaching methods.
(D) An advanced degree (e.g., Master's, Ph.D.) with research experience.

15. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A) : Curriculum evaluation is a crucial component of the curriculum development process.
Reason (R) : It helps in determining the extent to which the educational objectives have been

(A) Topics like exercise physiology, sports psychology, and kinesiology.
(B) Games like hide-and-seek and tag.
(C) Basic calisthenics and rhythmic activities.
(D) Learning to tie shoelaces and basic hygiene.

33. Which of the following is NOT a teaching aid in physical education?
(A) Cones and markers
(B) Video playback systems
(C) Student's medical insurance policy
(D) Anatomical charts

34. A cause-and-effect relationship in physical education could be:
(A) Cause: Regular participation in physical activity. Effect: Improved cardiovascular health.
(B) Cause: A well-planned curriculum. Effect: No change in student fitness levels.
(C) Cause: Lack of teaching aids. Effect: Higher student engagement.
(D) Cause: Introduction of technology. Effect: Poorer athletic performance.

35. Match List I with List II regarding curriculum concepts and descriptions.
List I : (Concept)
P. Curriculum Design
Q. Curriculum Evaluation
R. Credit System
S. Integrated Programme
List II : (Description)
1. Judging the worth of the educational program.
2. Co-educational activities for boys and girls.
3. The structural organization of the curriculum's content.
4. A unit to measure the academic workload.
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-4, R-1, S-3

36. One of the main responsibilities of physical education personnel in promoting health is:
(A) Prescribing medication for illnesses.
(B) Diagnosing and providing clinical treatment for various chronic diseases.
(C) Educating students about the benefits of a healthy lifestyle and regular exercise.
(D) Performing surgical procedures for sports injuries.

37. A comparative study of professional preparation in physical education with the UK would likely highlight its:
(A) Highly centralized government model similar to old Soviet Russia.
(B) Emphasis on a national curriculum and qualifications frameworks (QCF).
(C) Complete absence of university-level physical education degrees.
(D) Focus on sports as a purely recreational and non-academic pursuit.

38. The principle of 'classification of subject matter' with reference to sex implies that:
(A) Boys and girls should never participate in any activity together.
(B) The curriculum should consider physiological and sociological differences while promoting co-educational opportunities.
(C) The curriculum must be identical for boys and girls at all ages without any consideration for physiological differences.
(D) Girls should be excluded from all competitive sports.

39. Identify the incorrect statement regarding the public sector's role in promoting physical education.
(A) The public sector establishes national sports bodies and authorities.
(B) It is responsible for formulating national sports policies.
(C) It provides funding for sports infrastructure in government schools and colleges.
(D) Its role is exclusively focused on sponsoring professional sports leagues for profit.

40. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A) : The use of technology, like wearable fitness trackers, is becoming impactful in physical education.
Reason (R) : Such technology provides objective, real-time data on student activity levels and physiological responses, which can

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(B) Secondary Level - Introduction to rules of various sports.
(C) Higher Education - Research methodology and sports biomechanics.
(D) Primary Level - Advanced weight training and periodization.

24. The procedure of curriculum appraisal primarily involves:
(A) The systematic collection and analysis of data to judge a curriculum's worth.
(B) The one-time creation of a fixed syllabus for a specific academic cycle.
(C) The selection of textbooks used for the duration of the academic year.
(D) The administrative hiring of physical education teachers for the school.

25. Consider the following statements about the role of a physical education teacher:
I. They are responsible for teaching sports skills.
II. They contribute to the health and fitness of students.
III. They have a role in developing social skills like teamwork and sportsmanship.
IV. Their scope is limited to only training elite athletes.
V. They help in organizing intramural and extramural competitions.
Which of the above statement(s) is/are correct?
(A) I, II, III, IV, and V
(B) I, II, III, and V only
(C) I, IV, and V only
(D) II, III, and IV only

26. Which country's physical education system is noted for its strong link between universities and high-performance sport, as well as a robust system of collegiate athletics (NCAA)?
(A) USA
(B) Russia
(C) Germany
(D) UK

27. Read the statements given below and choose the correct option.
Statement I : The subject matter for a physical education curriculum must be carefully selected and classified.
Statement II : The selection of subject matter is independent of the age, sex, and abilities of the pupils.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

28. Which of the following is a primary quality of an effective physical education teacher at the secondary level?
(A) Inability to communicate with adolescents.
(B) Strong subject knowledge and pedagogical skills.
(C) Apathy towards student safety and well-being.
(D) Focus on a single sport to the exclusion of all others.

29. The concept of 'curriculum design' refers to:
(A) The physical layout and structural design of the school playground.
(B) The architectural design of a modern university sports complex.
(C) The organization of content, activities, and educational experiences.
(D) The design and color scheme chosen for the school team uniform.

30. Arrange the following steps of curriculum evaluation in a logical sequence.
I. Collection of evidence/data.
II. Analysis of evidence/data.
III. Defining the objectives to be evaluated.
IV. Making judgments and recommendations for improvement.
(A) I, II, III, IV
(B) III, I, II, IV
(C) III, II, I, IV
(D) IV, III, II, I

31. In the organizational set-up of a college, the physical education department is typically under the overall supervision of the:
(A) College Principal
(B) Student Union President
(C) Local Sports Authority
(D) District Education Officer

32. The 'subject matter' of physical education for the higher education level would most appropriately include:

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CHAPTER 05

Physical Education Pedagogy and Curriculum

1. Which of the following is a key aspect of the development of teacher education for physical education in India?
(A) A focus solely on indigenous sports from the post-independence era.
(B) A historical progression from basic training to specialized degree courses.
(C) The exclusion of health and wellness from teacher training programs.
(D) Complete adoption of the German model of physical education without modification.

2. What is the primary concept behind curriculum planning in physical education?
(A) A systematic process of designing and evaluating educational experiences.
(B) A rigid set of activities that remains fixed throughout the academic year.
(C) A list of potential sports to be taught, ranked by seasonal popularity.
(D) The administrative schedule used for planning annual school sports events.

3. Read the statements given below and choose the correct option.
Statement I : Government agencies in India are responsible for monitoring the quality and standards of professional courses in physical education.
Statement II : The role of these agencies is limited to providing financial grants and does not include curriculum oversight.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

4. Which of the following is an incorrect statement regarding the responsibilities of physical education personnel at the primary school level?
(A) They are responsible for developing fundamental motor skills.
(B) They need to create a safe and inclusive environment for all children.
(C) They play a role in introducing basic health and hygiene concepts.
(D) They should focus primarily on high-intensity competitive sports training.

5. Arrange the following potential stages in the development of physical education teacher training in India in a logical chronological order.
I. Introduction of certificate courses.
II. Establishment of specialized colleges of physical education.
III. Integration of physical education as a subject in universities.
IV. Development of doctoral programs (Ph.D.) in physical education.
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) III, IV, I, II

6. A physical education teacher designs a curriculum where younger students focus on locomotor skills and older students on complex team game strategies. This is an application of which principle?
(A) The specific principle of credit system allocation.
(B) The principle of selecting subject matter based on age.
(C) The primary principle of overall curriculum evaluation.
(D) The strategic principle of integrating modern technology.

7. What is the most appropriate description of the hierarchy of the organizational set-up in physical education at the university level?
(A) A flat structure with all teachers reporting

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be used for feedback and assessment.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

41. In the hierarchy of organizational set-up, what is the typical role of a Head of Department of Physical Education in a university?
(A) To personally coach every university sports team.
(B) To handle only the financial accounts of the university.
(C) To provide academic and administrative leadership to the department.
(D) To exclusively manage admissions for the entire university.

42. Which of the following professional courses is considered a foundational teacher training qualification in physical education in India?
(A) Bachelor of Physical Education (B.P.Ed.).
(B) A certificate in mountaineering.
(C) A Ph.D. in Sports Sociology.
(D) A diploma in sports journalism.

43. Which statement best reflects the purpose of curriculum evaluation?
(A) To punish teachers whose students do not perform well.
(B) To identify strengths and weaknesses for program improvement.
(C) To rank schools based on their curriculum documents.
(D) To eliminate all traditional games from the syllabus.

44. Which of the following is a key component when developing curriculum content for differently-abled pupils?
(A) A focus on creating maximum competitive stress.
(B) Individualized Education Program (IEP) considerations.
(C) Ensuring the activities are more difficult than for able-bodied pupils.
(D) Complete separation from all mainstream activities.

45. Consider the following statements regarding the qualifications and qualities of physical education personnel:
I. A strong academic foundation in sports sciences is desirable at the higher education level.
II. Good communication skills are essential at all levels.
III. Personal fitness and a passion for the subject are important qualities.
IV. Specific academic qualifications are not necessary for teaching positions.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I, II, and III only
(C) III and IV only
(D) I, II, III, and IV

46. Case Study: A school implements a new physical education curriculum. After one year, the principal wants to know if it has improved student fitness. What process should be initiated?
(A) Curriculum Design
(B) Subject Matter Selection
(C) Time-table Construction
(D) Curriculum Evaluation

47. The German physical education system's historical roots, which may be part of a comparative study, are strongly associated with:
(A) The ancient Greek Olympic Games.
(B) The "Turnverein" movement started by Friedrich Ludwig Jahn.
(C) The British public school system of "muscular Christianity".
(D) The Soviet "Ready for Labour and Defence" program.

48. Read the statements given below and choose the correct option.
Statement I : The public and private sectors in India have distinct but sometimes overlapping roles in the promotion of physical education.
Statement II : The private sector's involvement is often driven by corporate social responsibility (CSR) and commercial interests, while the public sector's role is policy-driven.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.

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(D) Statement I is false, but Statement II is true.

49. One of the main objectives of recent government policies promoting physical education in India is to:
(A) Combat sedentary lifestyles and related health issues.
(B) Increase the academic burden on students.
(C) Reduce the number of physical education teachers.
(D) Promote only a single, nationally chosen sport.

50. Consider the following principles of curriculum planning in physical education:
I. The curriculum should be based on the needs, interests, and abilities of the students.
II. The curriculum should be static and not change for at least a decade.
III. The curriculum should provide for a variety of activities to cater to diverse interests.
IV. The curriculum should have clear, achievable objectives.
V. The curriculum should be planned without considering available facilities and equipment.
Which of the above statement(s) is/are correct?
(A) I, III, and IV only
(B) II, III, and V only
(C) I, II, and IV only
(D) III, IV, and V only

51. What is the most significant impact of technology, such as motion analysis software, on physical education and sports?
(A) It reduces the importance of physical practice.
(B) It ensures that every student becomes a professional athlete.
(C) It provides precise, quantitative feedback for skill refinement.
(D) It eliminates the possibility of sports injuries.

52. The scope of a physical education professional in promoting 'fitness' primarily involves:
(A) Selling fitness equipment and supplements.
(B) Helping individuals develop and maintain components of physical fitness like strength, endurance, and flexibility.
(C) Administering medical treatments for lifestyle diseases.
(D) Focusing only on the aesthetic appearance of the body.

53. A comparative study of professional preparation in physical education with Australia would likely reveal:
(A) A system with no university involvement in teacher training.
(B) A strong focus on sport science and coaching education within its university system.
(C) A complete replication of the Russian sports school model.
(D) A system where physical education is not a mandatory subject in schools.

54. The concept of an 'appraisal' in curriculum evaluation refers to the act of:
(A) Writing the curriculum for the first time.
(B) Making an informed judgment about the value or effectiveness of the curriculum.
(C) Allocating a budget for the physical education department.
(D) Designing the annual sports day schedule.

55. Arrange the typical hierarchy of personnel in a large school's physical education department from highest to lowest authority.
I. Physical Education Teacher (PET)
II. Head of Physical Education Department
III. Assistant Physical Education Teacher
IV. Sports Coach (Specialized)
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, I, III, IV
(D) IV, II, I, III

56. Which of the following best describes an "integrated programme" for boys and girls?
(A) A program where boys and girls are taught in separate classes at all times.
(B) A thoughtfully planned curriculum with co-educational activities designed to foster mutual respect and learning.
(C) A program that only includes non-physical, theoretical classes for both genders.
(D) A system where boys' teams compete against girls' teams in every sport.

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57. A government agency like the National Council for Teacher Education (NCTE) in India plays a role in:
(A) Directly coaching the Indian Olympic team.
(B) Setting norms and standards for teacher education courses, including B.P.Ed.
(C) Organizing local school-level tournaments.
(D) Sponsoring private sports clubs.

58. Identify the correct statement regarding curriculum planning.
(A) Curriculum planning is a one-time activity that is never revisited.
(B) It should ignore the socio-cultural context of the school and students.
(C) It is a continuous and dynamic process that involves planning, implementation, and evaluation.
(D) The sole purpose of curriculum planning is to win medals in competitions.

59. The responsibility of a physical education teacher at the secondary level includes:
(A) Focusing only on unstructured free play.
(B) Teaching advanced tactics, techniques, and rules of various sports.
(C) Primarily teaching alphabets and numbers.
(D) Avoiding any discussion on health or fitness.

60. Match List I with List II regarding countries and professional preparation characteristics.
List I : (Country)
P. USA
Q. Russia
R. Germany
S. India
List II : (Characteristic)
1. Historical influence of the Turnverein movement.
2. Strong system of collegiate sports (NCAA) integrated with education.
3. Evolving system with institutions like LNIPE and NCTE regulations.
4. Legacy of a highly structured, state-sponsored sports school system.
(A) P-1, Q-3, R-4, S-2
(B) P-2, Q-4, R-1, S-3
(C) P-3, Q-1, R-2, S-4
(D) P-2, Q-3, R-1, S-4

61. What is a key reason for classifying subject matter with reference to age?
(A) To ensure that the activities are developmentally appropriate and safe.
(B) To give older students an unfair advantage.
(C) To reduce the cost of equipment.
(D) To fulfill an arbitrary administrative requirement.

62. Which of the following would be an example of the impact of technology in physical education?
(A) Using an app on a tablet to provide instant video feedback on a student's basketball jump shot.
(B) Using a traditional whistle to start a race.
(C) Using a printed textbook to learn the history of cricket.
(D) Using a chalkboard to write down the names of team members.

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63. The role of the public sector (government) in promoting physical education is best described as:
(A) Purely commercial and profit-oriented.
(B) Focused on governance, policy-making, and providing widespread access.
(C) Limited to sponsoring a few elite athletes.
(D) Entirely managed by non-governmental organizations.

64. A teacher notices that students in a class have a wide range of abilities. To cater to the 'differently abled pupils', the teacher's most competent action would be to:
(A) Make all students perform the exact same task, regardless of ability.
(B) Ask the differently abled students to sit out and only observe.
(C) Create modified versions of the activity with different levels of challenge.
(D) Cancel the physical education class altogether.

65. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A) : The hierarchy of organizational set-up in physical education is important for effective management in schools and colleges.
Reason (R) : A clear organizational structure

defines roles, responsibilities, and channels of communication, leading to smoother implementation of the curriculum.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

66. Which one of the following is NOT a principle of curriculum planning?
(A) Principle of Utility
(B) Principle of Child-Centeredness
(C) Principle of Inflexibility
(D) Principle of Integration

67. In a comparative study, the professional preparation of physical education in Russia would highlight:
(A) A system completely detached from the state's political ideology.
(B) A historical emphasis on creating a strong, physically adept populace for state purposes.
(C) A primary focus on dance and recreational arts over sports.
(D) A lack of specialized sports schools or academies.

68. The primary qualification for a physical education teacher at the primary level in India is typically:
(A) A certificate or diploma in physical education (e.g., C.P.Ed./D.P.Ed.).
(B) A Ph.D. in Kinesiology.
(C) An international coaching license.
(D) A master's degree in business administration.

69. Which statement correctly identifies a role of the private sector in promoting sports?
(A) Enacting national laws related to physical education in schools.
(B) Establishing and running high-performance sports academies and leagues.
(C) Accrediting university degrees in physical education.
(D) Appointing physical education teachers in government schools.

70. Consider the following statements regarding the importance of curriculum design and content:
I. A good design ensures a logical progression of learning.
II. The content selected determines what students will learn.
III. It is unimportant how the content is organized.
IV. Content should be selected without considering student interest.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) III and IV only
(C) I and III only
(D) II and IV only

71. The 'credit system' for theory and practical courses in higher education helps to:
(A) Standardize the academic value and workload of different courses.
(B) Determine the winner of a sports competition.
(C) Provide financial credit to students for purchasing equipment.
(D) Eliminate practical classes from the curriculum.

72. A key objective of a recent government policy like 'Khelo India' is to:
(A) Build a seamless structure from grassroots to elite sports and encourage a sports culture.
(B) Discourage mass participation and focus only on elite athletes from the start.
(C) Outsource all sports development to foreign companies.
(D) Focus exclusively on traditional Indian games and ban international sports.

73. When selecting subject matter for a secondary school physical education curriculum, which factor is most crucial?
(A) The need to balance skill development, fitness, and recreational aspects.
(B) The favorite sport of the school principal.
(C) The activities that require the least amount of equipment.
(D) Focusing on activities suitable only for elementary school children.

74. Read the statements given below and choose the correct option.
Statement I : A time-table is a critical teaching aid for a physical education teacher.

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Statement II : It helps in the organized and efficient use of time, facilities, and resources for conducting classes.

(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

75. Consider the following statements regarding the scope and responsibilities of physical education personnel:

I. Their role is confined to the playground during school hours.
II. They contribute to students' overall wellness, including mental and social health.
III. They are responsible for maintaining sports equipment and facilities.
IV. They play a part in identifying and nurturing sporting talent.
V. They have no role in teaching health and hygiene.

Which of the above statement(s) is/are correct?

(A) I, III, and V only
(B) II, III, and IV only
(C) I, II, and V only
(D) II, IV, and V only

76. The procedure for curriculum appraisal involves:

(A) A comprehensive assessment using various tools like surveys, observation, and performance tests.
(B) Ignoring student feedback and teacher observations.
(C) Solely relying on the scores of the final theory examination.
(D) A quick discussion among teachers without any data.

77. Which of the following defines the concept of curriculum evaluation?

(A) The daily lesson planning done by a teacher.
(B) The process of making judgments about the merit or worth of a curriculum.
(C) The selection of a sports team for a competition.
(D) The printing and distribution of the syllabus.

78. The primary role of a physical education teacher in promoting wellness is to:

(A) Encourage a balanced approach to life that includes physical activity, nutrition, and stress management.
(B) Act as a physician and prescribe medicine.
(C) Focus only on developing muscular strength.
(D) Guarantee that every student becomes a professional athlete.

79. A comparative study between the professional preparation systems of India and the USA in physical education would likely find that:

(A) India's system is older and more established than the USA's.
(B) Both countries have identical curriculum and certification requirements.
(C) The USA has a more decentralized system with significant variations among states and institutions.
(D) The USA has no university-level programs for physical education.

80. Identify the incorrect statement about curriculum content for differently-abled pupils.

(A) It should be adaptive and flexible.
(B) It should aim for inclusion wherever possible.
(C) It must be exactly the same as for able-bodied pupils, without any modification.
(D) Safety is a primary consideration in content selection.

81. A 'subject-centered' curriculum design in physical education would prioritize:

(A) The interests and needs of the students.
(B) The content, knowledge, and skills of specific sports and activities.
(C) Social problems and community issues.
(D) Unstructured free play with no specific learning goals.

82. In the organizational hierarchy of physical education at the school level, the Physical Education Teacher (PET) reports to:

(A) The Headmaster/Principal.
(B) The local police station.
(C) The university's Director of Sports.
(D) The students' parents association.

83. Which of the following is a direct responsibility of a physical education professional at the following higher education level?

(A) Teaching fundamental locomotor skills to

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curriculum.
(C) Firing the teachers.
(D) Buying new sports equipment.

102. Identify the correct statement regarding the organizational set-up of physical education.
(A) The hierarchy helps in clear delegation of authority and responsibility.
(B) There is no need for any organizational structure in schools.
(C) The university sports director reports to the primary school teacher.
(D) The organizational set-up is concerned only with academic classes, not sports.

103. Which of the following is a quality of a responsible physical education professional?
(A) Commitment to continuous professional development and learning.
(B) Disregard for safety rules.
(C) Inability to adapt lessons for students of varying abilities.
(D) Showing favoritism towards certain students.

104. A comparative study of the professional preparation in physical education in India versus Germany might explore:
(A) The influence of Germany's sport club system versus India's school- and college-centric approach.
(B) The identical nature of both systems with no differences.
(C) The complete absence of physical education in German schools.
(D) India's complete adoption of the German curriculum without any changes.

105. Arrange the following curricular processes in their logical order of execution.
I. Curriculum Implementation
II. Curriculum Planning and Design
III. Curriculum Evaluation
IV. Needs Assessment
(A) I, II, III, IV
(B) IV, II, I, III
(C) II, IV, III, I
(D) III, I, II, IV

106. What is the primary importance of 'curriculum design'?
(A) It provides a coherent and logical framework for the educational experience.
(B) It determines the color of the sports uniforms.
(C) It is only a bureaucratic formality with no practical use.
(D) It is exclusively concerned with the construction of sports facilities.

107. All of the following are responsibilities of physical education personnel at the secondary school level EXCEPT:
(A) Performing advanced biomechanical research for a doctoral thesis.
(B) Teaching rules and strategies of various games.
(C) Conducting fitness assessments.
(D) Managing intramural sports programs.

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108. The development of teacher education for physical education in India has been influenced by:
(A) The establishment of key institutions like the Lakshmibai National College of Physical Education (LNCPE/LNIPE).
(B) A complete rejection of all Western models.
(C) The decision to abolish all forms of teacher training.
(D) A focus only on yoga to the exclusion of all sports.

109. Read the statements given below and choose the correct option.
Statement I : An integrated physical education programme should involve careful planning to select activities suitable for mixed-gender groups.
Statement II : The primary goal of an integrated programme is to create unsafe and overly competitive environments between boys and girls.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

110. Match List I with List II regarding government bodies or policies and their roles in physical education and sports.
List I : (Body/Policy)
P. NCTE

objective.
(B) Ranking students from best to worst.
(C) Storing sports equipment in different rooms.
(D) Creating a timetable for examinations.

93. Read the statements given below and choose the correct option.
Statement I : The private sector plays no role in the promotion of physical education in India.
Statement II : Many corporate entities and private foundations fund sports infrastructure, academies, and events.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

94. The term 'responsibilities' of physical education personnel implies their:
(A) Professional duties and obligations towards students, the institution, and the profession.
(B) Personal hobbies and interests.
(C) Annual salary and perks.
(D) Political affiliations.

95. Consider the following statements regarding the curriculum for secondary education:
I. It should provide a transition from fundamental skills to specific sports.
II. It should include knowledge of health, fitness principles, and injury prevention.
III. It should focus only on one individual sport.
IV. It should offer opportunities for both competitive and recreational participation.
Which of the above statement(s) is/are correct?
(A) I, II, and IV only
(B) I and III only
(C) II, III, and IV only
(D) I, II, III, and IV

96. If a physical education curriculum lacks variety and is not based on student interests, the likely effect is:
(A) Decreased student engagement and higher dropout rates from activities.
(B) Increased student motivation and participation.
(C) Improved overall school discipline.
(D) Better performance in academic subjects.

97. What is the most appropriate 'subject matter' for physical education at the higher education level?
(A) Research methodology, sports management, and exercise prescription.
(B) Basic locomotor skills like running and jumping.
(C) Learning rules of simple games like tag.
(D) Rhymes and action songs.

98. An example of the 'scope' of physical education personnel in health promotion is:
(A) Conducting large-scale awareness campaigns on the importance of physical activity.
(B) Performing complex surgeries.
(C) Manufacturing pharmaceutical drugs.
(D) Formulating national economic policy.

99. The concept of a 'credit system' in a B.P.Ed. or M.P.Ed. program is used to:
(A) Measure the quantum of work in a course, encompassing lectures, tutorials, and practicals.
(B) Rank students' performance in athletic events.
(C) Provide a system of financial loans to students.
(D) Evaluate the quality of a university's infrastructure.

100. A school is developing its physical education curriculum. Consider the following factors that must be considered during the planning process:
I. The age and sex of the pupils.
II. The availability of facilities and equipment.
III. The expertise of the teaching staff.
IV. The climatic conditions of the region.
V. The curriculum should be designed to be completely rigid and unchangeable.
Which of the above statement(s) is/are correct?
(A) I, II, III, and IV only
(B) I, II, III, and IV only
(C) V only
(D) I and V only

101. The procedure of curriculum evaluation begins with:
(A) Clearly defining the purpose and objectives of the evaluation.
(B) Immediately changing the entire

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to other subjects and life experiences.
(B) Separating all subjects from each other.
(C) Teaching only one activity for the entire year.
(D) Having separate programs for boys and girls with no interaction.

157. A key objective of recent government policies promoting sports is to move from a 'sports-viewing' culture to a:
(A) Sports-playing and participation culture.
(B) Sports-avoiding culture.
(C) Sports-only-on-TV culture.
(D) Sports-betting culture.

158. The most significant contribution of the private sector to sports promotion is often in the area of:
(A) professional league management and athlete sponsorship.
(B) setting curriculum for public schools.
(C) law enforcement at sporting venues.
(D) awarding academic degrees.

159. The 'appraisal' step in curriculum evaluation involves:
(A) making a value judgment based on the evidence collected.
(B) designing the curriculum from scratch.
(C) implementing the curriculum for the first time.
(D) distributing textbooks to students.

160. Match list i with list ii regarding curriculum elements and examples.
List I : (element)
P. Subject matter (primary)
Q. Subject matter (higher ed)
R. Teaching aid
S. Evaluation procedure
List II : (example)
1. Sports biomechanics
2. Using a stopwatch and measurement tape for a fitness test.
3. Hoops and colorful bean bags.
4. Video projector.
(A) p-3, q-1, r-4, s-2
(B) p-1, q-3, r-2, s-4
(C) p-3, q-2, r-1, s-4
(D) p-4, q-1, r-3, s-2

161. The selection and classification of subject matter with reference to 'age' is an application of principles from:
(A) developmental psychology
(B) political science
(C) architectural design
(D) economic theory

162. Read the statements given below and choose the correct option.
Statement I : technology in physical education can enhance student learning and engagement.
Statement II : for example, exergaming (active video games) can motivate students who are otherwise reluctant to participate in traditional sports.
(A) both statement i and statement ii are true, and statement ii is a correct example for statement i.
(B) both statement i and statement ii are true, but statement ii is not a correct example for statement i.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

163. The role of a physical education teacher in promoting wellness among students is best described as that of a:
(A) facilitator and educator.
(B) surgeon.
(C) disciplinarian only.
(D) passive observer.

164. In india, professional courses in physical education like b.P.Ed and m.P.Ed are monitored for quality and standards by government agencies such as:
(A) the national council for teacher education (ncte).
(B) the film certification board.
(C) the indian space research organisation (isro).
(D) the reserve bank of india (rbi).

165. The following question consists of two statements—assertion (a) and reason (r). Answer the question by selecting the appropriate option.
Assertion (A) : curriculum planning in physical education should be a democratic process involving various stakeholders.
Reason (R) : involving teachers, students, and

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Q. UGC
R. Khelo India
S. SAI (Sports Authority of India)

List II : (Role)

1. Maintaining standards in higher education, including PE.
2. Setting norms for teacher education courses like B.P.Ed.
3. Nurturing talent and managing national sports facilities.
4. A recent policy to promote grassroots sports and a sports culture.

(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-1, R-4, S-3
(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-3, R-2, S-1

111. The selection of subject matter for a physical education curriculum should NOT be based on:
(A) The developmental level of the students.
(B) The personal and arbitrary whims of the teacher.
(C) The objectives of the curriculum.
(D) The available facilities and time.

112. A physical education teacher using a smart-board to explain the biomechanics of a long jump is an example of:
(A) The impact of technology in education.
(B) A failure in curriculum planning.
(C) A form of curriculum evaluation.
(D) The credit system.

113. The role of the public sector (government) in promoting physical education is primarily one of:
(A) Sponsoring individual athletes for brand endorsement.
(B) Operating exclusively through private franchises.
(C) Facilitation, regulation, and provision of infrastructure.
(D) Maximizing profit from sports events.

114. In curriculum planning, the term 'subject matter' refers to:
(A) The content, activities, games, and knowledge to be taught.
(B) The academic subjects the student is failing.
(C) The disciplinary issues with a student.
(D) The topic of the annual day drama.

115. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.

Assertion (A) : Private sector involvement is increasingly important for the promotion of sports in India.

Reason (R) : The private sector brings in financial investment, professional management, and marketing expertise that can supplement government efforts.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

116. A key quality for a physical education professional working with primary school children is:
(A) The ability to teach advanced calculus.
(B) Patience, enthusiasm, and the ability to make activities fun.
(C) A specialization in elite-level weightlifting coaching.
(D) An intimidating and authoritarian demeanor.

117. What is a core principle of curriculum planning in physical education?
(A) The principle of flexibility to adapt to changing needs.
(B) The principle of excluding all students with low skill levels.
(C) The principle of using the same plan for all age groups.
(D) The principle of focusing only on theory.

118. Which of the following represents the correct hierarchy in the Indian physical education system?
(A) School PET → College Director of PE → University Director of PE.
(B) University Director of PE → School PET → College Director of PE.
(C) College Director of PE → University Director of PE → School PET.
(D) School PET → University Director of PE → College Director of PE.

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(C) Their scope is strictly limited to refereeing matches.
(D) Their scope includes organizing and managing sports events.

138. The classification of subject matter in physical education according to 'sex' should be handled by:
(A) Thoughtfully designing integrated programs with modifications where biologically or socially appropriate.
(B) Providing separate curricula with no overlap.
(C) Forcing boys and girls to compete in all sports on equal terms without modification.
(D) Excluding one gender from physical education entirely.

139. Recent government policies in India aim to promote physical education by:
(A) Integrating physical education into the mainstream curriculum as a graded subject.
(B) Making sports an extracurricular activity only.
(C) Reducing the number of hours for physical education.
(D) Focusing only on academics and abolishing sports periods.

140. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A) : A well-structured organizational hierarchy is essential for the effective functioning of a university's physical education department.
Reason (R) : This hierarchy only serves to create bureaucracy and slows down decision-making.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

141. The development of physical education teacher training from certificate courses to degree and post-graduate courses signifies:
(A) An increase in the academic and professional status of the discipline.
(B) A decline in the quality of education.
(C) A shift away from practical skills towards pure theory.
(D) The irrelevance of physical education in the modern era.

142. Case Study: A physical education teacher wants to improve the shooting technique of the basketball team. The most effective use of technology would be:
(A) To use video analysis software to record, playback, and slow down the shooting action for feedback.
(B) To make the team watch a motivational movie about basketball.
(C) To increase the volume of the music played during practice.
(D) To use an online spreadsheet to track scores.

143. One of the main concepts of curriculum planning is that it should be:
(A) Student-centric
(B) Teacher-centric
(C) Examination-centric
(D) Facility-centric

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144. Which of the following is a key responsibility for a physical education professional at any level?
(A) Ensuring the safety of the participants.
(B) Winning every competition at any cost.
(C) Providing medical prescriptions.
(D) Focusing only on the most talented students.

145. Consider the following statements about curriculum content for different levels:
I. Primary level content should focus on fundamental movement skills.
II. Secondary level content introduces tactical aspects of games.
III. Higher education content includes research and sports sciences.
IV. The content should be identical across all three levels.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I, II, and III only
(C) IV only
(D) II and III only

146. A comparative study of professional preparation in PE with the UK would likely focus on:
(A) The role of the National Curriculum and

physical education in a university is typically more complex than in a primary school.
Statement II : universities manage multiple sports teams, large facilities, academic departments, research, and intramural programs, requiring a more detailed hierarchy.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

129. The main purpose of a 'time-table' as a teaching aid is:
(A) To record lap times in a race.
(B) To ensure systematic and organized instruction.
(C) To measure the impact of technology.
(D) To evaluate the curriculum.

130. A teacher who modifies a volleyball game by using a beach ball and a lower net for younger children is applying the principle of:
(A) Selecting subject matter according to age and ability.
(B) Curriculum evaluation.
(C) The credit system.
(D) Ignoring student needs.

131. Which of the following is an example of the role of the private sector in promoting sports?
(A) The Ministry of Youth Affairs and Sports formulating a national sports policy.
(B) A corporate group establishing a "Center of Excellence" for badminton training.
(C) The NCTE setting standards for the B.P.Ed. course.
(D) A government school hiring a physical education teacher.

132. The process of appraising a curriculum is essentially a form of:
(A) Quality control and improvement.
(B) Initial planning.
(C) Student admission.
(D) Budget allocation.

133. Which of the following is NOT a typical professional course in physical education in India?
(A) B.P.Ed. (Bachelor of Physical Education)
(B) M.P.Ed. (Master of Physical Education)
(C) B.Tech. (Bachelor of Technology) in Computer Science
(D) C.P.Ed. (Certificate in Physical Education)

134. An integrated programme for boys and girls in physical education is based on the pedagogical principle of:
(A) Co-education and inclusion
(B) Segregation
(C) Elitism
(D) Exclusion

135. Match List I with List II regarding educational levels and their primary physical education curriculum focus.
List I : (Level)
P. Primary
Q. Secondary
R. Higher Education
S. Pre-School
List II : (Curriculum Focus)
1. Introduction to team sports, fitness concepts.
2. Research, specialization, and professional preparation.
3. Unstructured play, basic movement patterns.
4. Fundamental motor skills, fun games, coordination.
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-1, R-2, S-3
(C) P-3, Q-4, R-1, S-2
(D) P-2, Q-3, R-4, S-1

136. The body responsible for granting recognition to teacher education institutions in India, including those for physical education, is:
(A) The National Council for Teacher Education (NCTE)
(B) The Sports Authority of India (SAI)
(C) The Board of Control for Cricket in India (BCCI)
(D) The National Council of Educational Research and Training (NCERT)

137. Which of the following is an incorrect statement about the scope of physical education personnel?
(A) Their scope includes promoting health and fitness.
(B) Their scope involves teaching sports skills and rules.

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119. The purpose of a comparative study of professional preparation in physical education is to:
(A) understand different approaches, learn from best practices, and gain perspective on one's own system.
(B) prove that one country's system is absolutely superior in all aspects.
(C) encourage the wholesale adoption of another country's system without adaptation.
(D) fulfill a purely academic exercise with no practical relevance.

120. Consider the following purposes of curriculum evaluation in physical education:
I. To determine if students are achieving the learning objectives.
II. To provide feedback for improving the curriculum.
III. To assess the effectiveness of teaching methods.
IV. To serve as a basis for accountability.
Which of the above statement(s) is/are correct?
(A) i and ii only
(B) iii and iv only
(C) i, ii, and iii only
(D) i, ii, iii, and iv

121. One major impact of technology on sports is the ability to:
(A) make athletes immune to fatigue.
(B) eliminate the need for coaches.
(C) analyze performance with a high degree of precision.
(D) guarantee victory in every competition.

122. A 'credit' in a university course is a numerical value that typically represents:
(A) one hour of class time per week throughout a semester.
(B) the student's rank in the class.
(C) the number of trophies won by the student.
(D) the amount of money the student owes the university.

123. Which statement about curriculum content for 'differently abled pupils' is most accurate?
(A) it should focus on inclusion and adaptation.
(B) it should be identical to the mainstream curriculum with no changes.
(C) it should exclude them from all physical activities.
(D) it should prioritize high-risk, extreme sports.

124. The development of teacher education for pe in india reflects a move towards:
(A) decreased academic rigor.
(B) greater professionalization and academic recognition of the field.
(C) the abolition of all practical training.
(D) a complete dependence on foreign trainers.

125. Consider the following statements regarding curriculum planning and design:
I. The needs of the learner are a central consideration.
II. A good curriculum design has a logical sequence.
III. The curriculum should be rigid and never be modified.
IV. Community resources and values should be ignored.
V. Evaluation is an unnecessary final step.
Which of the above statement(s) is/are correct?
(A) i and ii only
(B) iii, iv, and v only
(C) i, ii, and iii only
(D) iii and v only

126. A physical education teacher's responsibility for promoting student 'health' includes:
(A) teaching the importance of nutrition, hygiene, and disease prevention through an active lifestyle.
(B) diagnosing and treating medical conditions.
(C) ignoring any signs of illness or injury in students.
(D) encouraging students to adopt unhealthy eating habits.

127. The qualification of a m.Phil or ph.D. In physical education would be most relevant for a position at the:
(A) pre-primary school level.
(B) primary school level.
(C) secondary school level.
(D) higher education (university) level.

128. Read the statements given below and choose the correct option.
Statement I : the organizational set-up of

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Ofsted inspections.
(B) The non-existence of PE in British schools.
(C) A system identical to that of Russia.
(D) A purely club-based system with no school involvement.

147. A "learner-centered" curriculum design focuses on:
(A) The needs, interests, and developmental stages of the student.
(B) The structure of the subject matter.
(C) The ease of evaluation for the teacher.
(D) The historical importance of the subject.

148. Read the statements given below and choose the correct option.
Statement I : The role of a physical education teacher in promoting wellness is limited to the physical dimension.
Statement II : Wellness is a multidimensional concept including social, emotional, and intellectual health, all of which can be influenced through positive physical education experiences.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

149. The 'importance' of selecting and classifying curriculum subject matter lies in ensuring that the program is:
(A) Appropriate, progressive, and effective.
(B) Random and chaotic.
(C) Easy for the teacher to deliver, regardless of student needs.
(D) The same as it was 50 years ago.

150. Consider the following responsibilities of physical education personnel in a school setting:
I. Planning and delivering effective lessons.
II. Assessing student progress.
III. Managing sports equipment and facilities.
IV. Liaising with parents and other staff.
V. Diagnosing and treating complex medical conditions.
Which of the above statement(s) is/are correct?
(A) I, II, III, and IV only
(B) II, III, IV, and V only
(C) I, II, and V only
(D) I, II, III, IV, and V

151. The purpose of curriculum evaluation is to gather information primarily to:
(A) Make decisions about the curriculum.
(B) Punish underperforming students.
(C) Justify a larger budget.
(D) Hire new teachers.

152. Which of the following best describes the historical development of teacher education for physical education in India?
(A) It has shown a trend of increasing academic rigor and specialization over time.
(B) It started with Ph.D. programs and then introduced certificate courses.
(C) It has remained unchanged since the pre-independence era.
(D) It has been completely dismantled in recent years.

153. The hierarchy of organizational set-up in a college's physical education department ensures:
(A) Clear lines of authority and efficient management.
(B) Confusion and lack of accountability.
(C) That students are in charge of all decisions.
(D) That only one sport is promoted.

154. A qualification like B.P.Ed. is essential for a physical education teacher at which level?
(A) Secondary school.
(B) University research fellow.
(C) Crèche or daycare.
(D) National team coach for an Olympic sport.

155. Arrange the following personnel/bodies in a typical top-down hierarchy of physical education governance in India.
I. Physical Education Teacher in a school.
II. Director of Physical Education in a University.
III. Ministry of Youth Affairs & Sports (at national policy level).
IV. Head of PE Department in a college.
(A) I, IV, II, III
(B) III, II, IV, I
(C) II, III, I, IV
(D) IV, I, II, III

156. In curriculum design, an 'integrated' approach means:
(A) Relating the concepts of physical education

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toddlers.
(B) Conducting research and publishing scholarly articles in the field.
(C) Organizing recess for primary school children.
(D) Ensuring children wash their hands before lunch.

84. The 'impact of technology' in physical education is LEAST related to which of the following?
(A) Biomechanical analysis of movement.
(B) E-learning modules on sports rules.
(C) The natural color of the playground grass.
(D) Wearable heart rate monitors for fitness tracking.

85. Match List I with List II regarding terms and their relevance in the physical education curriculum.
List I : (Term)
P. Time-table
Q. Credit System
R. Technology Impact
S. Curriculum Appraisal
List II : (Relevance)
1. Use of performance analysis software.
2. Judging the effectiveness of the program.
3. Scheduling classes and use of facilities.
4. Quantifying student workload in higher education.
(A) P-3, Q-4, R-1, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-1, R-2, S-3
(D) P-3, Q-2, R-1, S-4

86. A key feature of recent government policies for promoting sports in India is the emphasis on:
(A) Grassroots talent identification.
(B) Reducing the number of sports facilities.
(C) Banning foreign coaches.
(D) Focusing only on academics in schools.

87. Which of these is a professional course in physical education in India, typically pursued after a bachelor's degree?
(A) Master of Physical Education (M.P.Ed.).
(B) Secondary School Leaving Certificate.
(C) Certificate in First Aid.
(D) Diploma in Computer Applications.

88. All of the following are benefits of an integrated physical education program for boys and girls EXCEPT:
(A) Development of mutual respect.
(B) Enhanced social skills.
(C) Reinforcement of gender stereotypes.
(D) Increased opportunities for participation in modified games.

89. A physical education curriculum planned for the primary level should emphasize:
(A) High-level competitive strategies.
(B) Heavy weightlifting.
(C) Fun, exploration of movement, and development of fundamental motor skills.
(D) In-depth study of sports medicine literature.

90. The following question consists of two statements—Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A) : The selection and classification of subject matter in physical education must consider the age of the pupils.
Reason (R) : The cognitive, physical, and emotional development of students varies significantly across different age groups, making certain activities more appropriate for some than for others.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

91. The role of government agencies like the University Grants Commission (UGC) in physical education is to:
(A) Select players for the national cricket team.
(B) Maintain standards of higher education, including physical education departments in universities.
(C) Construct stadiums for international events.
(D) Directly manage the day-to-day activities of school playgrounds.

92. What does 'classification of subject matter' in curriculum planning refer to?
(A) Grouping activities and content based on specific criteria like type, difficulty, or

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community members can make the curriculum more relevant, effective, and widely accepted.
(A) both a and r are true and r is the correct explanation of a.
(B) both a and r are true but r is not the correct explanation of a.
(C) a is true but r is false.
(D) a is false but r is true.

166. A comparative study of professional preparation in pe with russia would likely examine:
(A) the legacy of the soviet system of 'sports schools' and talent identification.
(B) the historical 'sokol' movement.
(C) the influence of the ncaa.
(D) the laid-back, recreation-only approach to sports.

167. A physical education teacher's responsibility extends to the promotion of fitness. This involves:
(A) designing and implementing programs to improve students' strength, endurance, and flexibility.
(B) selling fitness products.
(C) ignoring students' physical condition.
(D) focusing only on one component of fitness, such as strength.

168. The primary purpose of an 'integrated programme' for boys and girls in pe is:
(A) to foster a healthy, respectful, and cooperative co-educational environment.
(B) to save money on equipment.
(C) to prove that one gender is superior to the other in all activities.
(D) to eliminate all challenging physical activities from the curriculum.

169. Identify the incorrect statement regarding the organizational set-up of physical education.
(A) the hierarchy helps in the smooth functioning of the department.
(B) the set-up in a university is more complex than in a school.
(C) the organizational set-up has no impact on curriculum implementation.
(D) the structure defines roles like head of department, teacher, and coach.

170. Consider the following key qualities of a competent physical education professional:
I. Strong subject matter knowledge.
II. Apathy and lack of enthusiasm.
III. Good communication and interpersonal skills.
IV. A commitment to student safety and well-being.
Which of the above statement(s) is/are correct?
(A) i, iii, and iv only
(B) i and ii only
(C) ii and iv only
(D) i, ii, iii, and iv

171. A 'credit system' in higher education for courses like b.P.Ed. Is a concept that:
(A) quantifies the learning volume and helps in transferring credits between institutions.
(B) measures the popularity of a course.
(C) provides a discount on tuition fees.
(D) ranks teachers based on their performance.

172. The term 'curriculum' in physical education encompasses:
(A) all the planned experiences, activities, and learning that students undertake.
(B) only the list of sports to be played.
(C) only the final examination paper.
(D) only the dimensions of the playground.

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173. One of the main reasons for the development of teacher education in physical education in india was:
(A) the need to have properly trained professionals instead of untrained ex-military personnel.
(B) the government's decision to ban sports.
(C) the desire to copy the american system exactly.
(D) the lack of interest in physical activity among the youth.

174. The curriculum content for secondary level physical education should be designed to:
(A) build upon fundamental skills and introduce more complex game strategies and fitness concepts.
(B) be simpler than the primary level curriculum.
(C) focus exclusively on theoretical knowledge with no practicals.

(C) sponsoring a specific brand of shoes.
(D) owning a private gym franchise.

234. The selection and classification of subject matter based on sex should be approached with:
(A) sensitivity, ensuring equity while acknowledging physiological differences where relevant.
(B) strict segregation in all activities at all ages.
(C) complete disregard for any differences.
(D) a bias towards one gender.

235. Match list i with list ii regarding curriculum concepts and their key ideas.
List I : (concept)
P. Curriculum evaluation
Q. Curriculum planning
R. Impact of technology
S. Organizational hierarchy
List II : (key idea)
1. Using apps for fitness tracking.
2. Structure of authority (e.G., Director, head, teacher).
3. Judging the worth of a program.
4. A systematic process of designing learning.
(A) p-1, q-2, r-3, s-4
(B) p-2, q-1, r-4, s-3
(C) p-3, q-4, r-1, s-2
(D) p-4, q-3, r-2, s-1

236. A recent government of india policy for promoting physical education would most likely emphasize:
(A) the integration of fitness and sports into the daily school curriculum.
(B) a reduction in the time allocated for sports.
(C) a focus only on elite athletes.
(D) the import of all sports equipment from a single country.

237. The 'subject matter' for a curriculum for differently-abled pupils should be:
(A) selected and adapted to ensure maximum participation and benefit.
(B) exactly the same as for everyone else, with no modifications.
(C) limited to non-physical activities.
(D) designed to be exclusionary.

238. A physical education teacher's professional qualities include all of the following except:
(A) strong subject knowledge.
(B) good communication skills.
(C) apathy towards student development.
(D) a positive and enthusiastic attitude.

239. The role of the public sector (government) is different from the private sector in that the public sector is primarily responsible for:
(A) creating policy, regulation, and ensuring access for the general population.
(B) generating profits for shareholders.
(C) sponsoring celebrity endorsements.
(D) managing television broadcast rights.

240. The following question consists of two statements—assertion (a) and reason (r). Answer the question by selecting the appropriate option.
Assertion (A) : the credit system in higher education helps in ensuring uniformity and transferability of academic achievements.
Reason (R) : a credit is a universally recognized unit that quantifies the workload of a course, making it easier to evaluate a student's record across different institutions.
(A) both a and r are true and r is the correct explanation of a.
(B) both a and r are true but r is not the correct explanation of a.
(C) a is true but r is false.
(D) a is false but r is true.

241. The development of physical education teacher preparation in india has been marked by the establishment of institutions such as:
(A) indian institutes of management (iims).
(B) lakshmibai national institute of physical education (lnipe).
(C) all india institutes of medical sciences (aiims).
(D) indian institutes of technology (iits).

242. A pe teacher who uses video replays to help a gymnast correct their form is utilizing:
(A) the impact of technology
(B) curriculum evaluation
(C) the credit system
(D) a government policy

243. The concept of "curriculum design" refers to:
(A) the structure and organization of the curriculum's components.

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185. Match list I with list II regarding curriculum terms and descriptions.
List I : (term)
P. Curriculum planning
Q. Subject matter
R. Integrated programme
S. Curriculum appraisal
List II : (description)
1. Content of the course (e.G., Skills, games, knowledge).
2. Co-educational activities for boys and girls.
3. Systematic process of designing educational experiences.
4. A procedure for judging the merit of the curriculum.
(A) p-1, q-2, r-3, s-4
(B) p-3, q-1, r-2, s-4
(C) p-4, q-3, r-1, s-2
(D) p-2, q-4, r-3, s-1

186. The development of specialized professional courses like m.P.Ed. In india aimed to:
(A) create leaders, administrators, and researchers in the field of physical education.
(B) provide basic physical training for primary school teachers.
(C) reduce the importance of physical education.
(D) train athletes for a single specific sport.

187. The impact of technology, such as online databases and journals, on higher physical education is:
(A) it has greatly facilitated access to scientific literature and research.
(B) it has made research more difficult.
(C) it has eliminated the need for libraries.
(D) it has had no impact.

188. Which of these is an example of a recent government policy or scheme for promoting sports in india?
(A) the khelo india scheme
(B) the rowlatt act
(C) the industrial revolution
(D) the green revolution

189. A curriculum designed for 10-year-olds that focuses on team games like basketball and soccer, and a curriculum for 6-year-olds that focuses on running, hopping, and skipping, demonstrates the principle of:
(A) classification of subject matter by age.
(B) ignoring the needs of children.
(C) curriculum evaluation.
(D) the impact of technology.

190. The following question consists of two statements—assertion (a) and reason (r). Answer the question by selecting the appropriate option.
Assertion (A) : adapting curriculum content for differently-abled pupils is a fundamental responsibility of a physical education teacher.
Reason (R) : the principle of inclusion mandates that all students, regardless of ability, should have the opportunity to participate and learn in the least restrictive environment possible.
(A) both a and r are true and r is the correct explanation of a.
(B) both a and r are true but r is not the correct explanation of a.
(C) a is true but r is false.
(D) a is false but r is true.

191. In the hierarchy of a school's organizational set-up, the pe teacher works in coordination with:
(A) other subject teachers and school administration.
(B) only the sports goods vendors.
(C) the national sports federation exclusively.
(D) the head of a different school.

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192. A key difference between the role of public and private sectors in sports promotion is:
(A) public sector is policy-oriented; private sector is often profit or csr-oriented.
(B) public sector is profit-oriented; private sector is policy-oriented.
(C) there is no difference in their roles.
(D) the private sector is responsible for all laws and regulations.

193. What is the best description of curriculum concepts?
(A) the fundamental ideas and theories that underpin the creation of a curriculum.
(B) the specific list of holidays in a school year.
(C) the architectural plans for a new gymnasium.
(D) the rules for student admission.

194. A pe teacher at a secondary school notices a decline in student participation. The most competent first step is to:
(A) survey the students to understand their interests and review the curriculum content.
(B) punish the students who are not participating.
(C) immediately request a transfer to another school.
(D) ignore the problem and continue with the existing plan.

195. Consider the following statements regarding the principles of curriculum planning:
I. The curriculum should be child-centric.
II. The curriculum should be rigid and unchangeable.
III. The curriculum should have clear objectives.
IV. The curriculum should be disconnected from community life.
Which of the above statement(s) is/are correct?
(A) i and iii only
(B) ii and iv only
(C) i, ii, and iii only
(D) i and iv only

196. The purpose of a time-table in the context of physical education is to:
(A) provide a structured plan for the allocation of time and resources for pe classes.
(B) rank students based on their speed.
(C) list the historical timelines of various sports.
(D) function as a calendar for national holidays.

197. Which of the following is a key responsibility of a pe professional at the university level?
(A) guiding postgraduate research and teaching specialized subjects like exercise physiology.
(B) teaching nursery rhymes.
(C) supervising nap time for toddlers.
(D) ensuring primary school students have their lunch.

198. Read the statements given below and choose the correct option.
Statement I : the credit system in professional pe courses is arbitrary and has no logical basis.
Statement II : the credit system is a standardized method to quantify course work, based on the number of hours of instruction and study required.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

199. When planning an integrated pe program for boys and girls, a teacher must consider:
(A) activities that encourage cooperation and mutual respect.
(B) activities that create conflict and gender bias.
(C) only activities that boys prefer.
(D) only activities that girls prefer.

200. Consider the following essential components of a comprehensive pe curriculum design:
I. Clearly stated objectives.
II. A selection of appropriate content and activities.
III. A plan for organizing the content (sequence and structure).
IV. Methods for evaluating student learning and program effectiveness.
V. A strict rule against any form of play or fun.
Which of the above statement(s) is/are correct?
(A) i, ii, iii, and v only
(B) i, ii, iii, and iv only
(C) v only
(D) i and v only

201. The 'scope of physical education personnel in the promotion of health' refers to:
(A) the range of their influence and activities in educating for and encouraging healthy lifestyles.
(B) their ability to perform surgery.
(C) their authority to enforce a national diet.
(D) their role being limited to just coaching a sport.

202. A professional qualification for a pe teacher at the primary level could be:
(A) diploma in physical education (d.P.Ed.).
(B) ph.D. In sports psychology
(C) m.B.B.S.
(D) master of business administration

203. The procedure of curriculum evaluation should be:
(A) systematic, objective, and continuous.
(B) haphazard and subjective.

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(C) done only once when the curriculum is first created.
(D) conducted by people with no knowledge of physical education.

204. The increasing use of fitness apps and wearable technology in pe classes is an example of:
(A) the impact of technology on the subject.
(B) the decline of physical education.
(C) a failure of curriculum planning.
(D) a government monitoring system.

205. Arrange the following levels of education in ascending order of complexity of physical education subject matter.
I. Secondary education
II. Higher education
III. Primary education
(A) i, ii, iii
(B) iii, i, ii
(C) ii, i, iii
(D) i, iii, ii

206. A comparative study of india's professional preparation in physical education with that of the uk would likely note the uk's emphasis on:
(A) the national curriculum for physical education.
(B) the soviet-style sports schools.
(C) the ncaa model of collegiate sports.
(D) the german turnverein movement.

207. The selection of subject matter for a physical education curriculum for differently-abled students must prioritize:
(A) safety, adaptability, and inclusion.
(B) exclusion and separation.
(C) high-intensity competition without modification.
(D) theoretical study only.

208. The most important quality of a physical education teacher is:
(A) the ability to create a positive, safe, and motivating learning environment.
(B) a world record in a sporting event.
(C) the ability to ignore students' questions.
(D) a strict, non-communicative attitude.

209. The hierarchy of organizational set-up at the university level includes roles such as:
(A) director of sports, head of department, professor, coach.
(B) only a single teacher for the entire university.
(C) a committee of students with full authority.
(D) the local mayor being the head of the department.

210. Match list i with list ii regarding countries and key features of their pe or sports systems.
List I : (country)
P. Germany
Q. Australia
R. Usa
S. Uk
List II : (system feature)
1. Strong focus on sport science and high performance institutes (e.G., Ais).
2. Dominance of school and collegiate sport structure (e.G., Ncaa).
3. Influence of a national curriculum and inspection body (ofsted).
4. Widespread system of community-based sports clubs (verein).
(A) p-1, q-2, r-3, s-4
(B) p-2, q-3, r-4, s-1
(C) p-4, q-1, r-2, s-3
(D) p-3, q-4, r-1, s-2

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211. What is the central concept of curriculum development?
(A) a dynamic and continuous process of planning, implementing, and evaluating learning experiences.
(B) a static, one-time task of writing a syllabus.
(C) the purchase of sports equipment.
(D) the scheduling of annual sports meets.

212. A government policy that provides grants for developing playgrounds in schools is an example of promoting physical education through:
(A) infrastructure development.
(B) curriculum evaluation.
(C) a credit system.
(D) the use of technology.

213. Read the statements given below and choose the correct option.
Statement I : the public sector's role in sports is solely to generate profit.
Statement II : the public sector is responsible for policy, governance, and ensuring broad

approaches. Similarly, the integration of sports science, biomechanics, and exercise physiology into the core curriculum varies significantly across these nations. Germany's club-based sports system influences its professional preparation, while the UK's model is shaped by its national curriculum frameworks. By studying these systems, Indian educational planners can identify best practices, adapt innovative pedagogical strategies, and benchmark their own professional courses against global standards, ultimately aiming to enhance the quality, relevance, and international recognition of physical education teacher preparation programs in the country. This comparative perspective is not about direct imitation but about informed adaptation to strengthen the indigenous educational framework.
Based on the above source, attempt the following five questions.

251. What is the primary purpose of conducting a comparative study of professional preparation in physical education as described in the paragraph?
(A) To replicate the educational models of the USA and Australia in India.
(B) To critically analyze diverse approaches and identify best practices for adaptation.
(C) To prove the superiority of the Indian physical education system over others.
(D) To create a globally uniform curriculum for all physical education courses.

252. According to the paragraph, what aspect of professional preparation is particularly influenced by Germany's sports system?
(A) The integration of its club-based sports structure into professional training.
(B) The strong emphasis on research and evidence-based practice.
(C) The rigid adherence to state-mandated pedagogical models.
(D) The focus on national curriculum frameworks similar to the UK.

253. The paragraph suggests that a key difference in professional preparation between countries like the USA/Australia and others might be the:
(A) Lack of any government oversight in their curriculum.
(B) Exclusive focus on practical sports skills over theory.
(C) Greater emphasis on research and evidence-based practice.
(D) Complete absence of traditional coaching methods.

254. What is the ultimate goal of undertaking a comparative study for the Indian physical education system?
(A) To ensure all Indian professionals can find jobs in the USA, Russia, or Germany.
(B) To completely replace the existing Indian curriculum with a foreign one.
(C) To receive accreditation from international sports federations.
(D) To strengthen the indigenous educational framework through informed adaptation.

255. Which of the following is NOT mentioned as a key area for comparison in the study of professional preparation?
(A) Curriculum structures and content.
(B) Pedagogical models and teaching strategies.
(C) Salary structures for physical education personnel.
(D) Accreditation standards for professional courses.

Direction : Please read the following source carefully.

The landscape of professional education in physical education in India is characterized by a spectrum of specialized courses designed to equip individuals for various roles within the field. These professional courses, ranging from diploma to doctoral levels, are foundational for creating a competent workforce. The quality and standardization of these programs are not left to chance; they are closely monitored by government agencies. The role of these monitoring bodies is multifaceted and crucial for maintaining academic integrity. They are responsible for granting recognition to institutions, prescribing curriculum frameworks, setting minimum standards for infrastructure and faculty qualifications, and periodically reviewing programs to ensure they meet evolving needs. This regulatory oversight ensures that professional courses in physical education maintain a certain benchmark of quality, preventing the proliferation of substandard programs. By establishing norms

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(A) based on the needs of the learners.
(B) progressive and sequential.
(C) flexible and adaptable.
(D) rigid and unchangeable.

224. The hierarchy of the organizational set-up at the college level ensures that:
(A) there is a clear line of command from the principal to the director of pe to the teachers.
(B) all decisions are made by students.
(C) there is no accountability.
(D) the college functions in a state of chaos.

225. Consider the following statements about the role and qualifications of physical education personnel:
I. Qualifications vary based on the level of education (primary, secondary, higher).
II. A passion for physical activity and well-being is a desirable quality.
III. Responsibilities include student safety, instruction, and assessment.
IV. A ph.D. Is a typical requirement for a primary school pe teacher.
V. Good communication skills are essential for effective teaching.
Which of the above statement(s) is/are correct?
(A) i, ii, iii, and v only
(B) i and iv only
(C) iv and v only
(D) i, ii, iii, iv, and v

226. The private sector contributes to the promotion of physical education mainly through:
(A) investment, sponsorship, and management of professional entities.
(B) legislation and national policy.
(C) regulating teacher education standards.
(D) running the physical education programs in all government schools.

227. A key principle of curriculum planning is 'relevance', which means the curriculum should:
(A) be connected to the lives and culture of the students and community.
(B) be completely abstract and disconnected from reality.
(C) be based on outdated information.
(D) be designed by people from a different country.

228. Read the statements given below and choose the correct option.
Statement I : the content of a physical education curriculum for higher education is the same as for primary education.
Statement II : higher education focuses on advanced, specialized topics like sports medicine and research, while primary education focuses on fundamental motor skills.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

229. The ultimate purpose of curriculum evaluation is:
(A) to improve student learning.
(B) to find fault with the teacher.
(C) to create more paperwork.
(D) to eliminate physical education.

230. The impact of technology in physical education is seen in the use of:
(A) video analysis for skill correction.
(B) abacus for counting scores.
(C) typewriters for lesson plans.
(D) telegraphs for communication.

231. The main difference in the responsibilities of a physical education teacher at the primary vs. Secondary level is:
(A) primary teachers have no responsibilities.
(B) secondary teachers do not need to worry about safety.
(C) there is no difference in their responsibilities.
(D) the complexity of the skills and concepts taught.

232. An integrated program for boys and girls should be designed to be:
(A) socially inclusive and developmentally appropriate.
(B) exclusive and segregated.
(C) competitive to the point of being unsafe.
(D) focused only on theoretical concepts.

233. Which of the following represents a role for a government agency in physical education?
(A) setting standards for professional courses.
(B) managing a professional football league for profit.

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(D) include only individual, non-competitive activities.

175. Consider the following statements regarding the role of public and private sectors in promoting pe and sports:
I. The public sector is responsible for national policy and regulation.
II. The private sector often contributes through sponsorship and professional management.
III. Both sectors can collaborate to develop sports infrastructure.
IV. The private sector is solely responsible for physical education in government schools.
V. The public sector's role is purely commercial.
Which of the above statement(s) is/are correct?
(A) i, ii, and iii only
(B) iii, iv, and v only
(C) i, iv, and v only
(D) i, ii, and v only

176. Which of the following best defines a 'teaching aid' in the context of physical education?
(A) any tool or device used by the teacher to make learning more effective and engaging.
(B) the teacher's salary.
(C) the student's report card.
(D) the school building.

177. A teacher designing an activity that can be performed by a student in a wheelchair alongside running students is demonstrating an understanding of:
(A) curriculum for differently-abled pupils.
(B) the credit system.
(C) the history of the olympic games.
(D) the organizational hierarchy.

178. The purpose of curriculum appraisal is to:
(A) assess the worth of the curriculum and guide future improvements.
(B) blame teachers for any shortcomings.
(C) create a rigid, unchangeable document.
(D) select the school sports team.

179. A key qualification for a pe teacher at the secondary school level in india is:
(A) a bachelor of physical education (b.P.Ed.) Degree.
(B) a basic first-aid certificate only.
(C) a good high school sports record with no professional degree.
(D) a doctorate in an unrelated field.

180. The classification of curriculum subject matter is important for:
(A) ensuring a logical and sequential progression of learning.
(B) making the curriculum more confusing for students.
(C) reducing the number of activities taught.
(D) satisfying a purely bureaucratic requirement.

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181. In the context of a comparative study, the professional preparation in the usa is characterized by its:
(A) diversity, with strong state-level control and influence of organizations like shape america.
(B) single, federally controlled curriculum for all states.
(C) total lack of research in sports sciences.
(D) system being a direct copy of the russian model.

182. Read the statements given below and choose the correct option.
Statement I : the private sector's role in sports promotion in india is growing.
Statement II : this is evident from the rise of privately-owned sports leagues, academies, and corporate sponsorships.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

183. Which of the following is not a responsibility of a physical education teacher?
(A) prescribing antibiotics for student illnesses.
(B) lesson planning.
(C) student assessment.
(D) ensuring a safe learning environment.

184. The 'scope' of physical education personnel has broadened from just 'drill and pt' to include:
(A) health, fitness, and wellness promotion.
(B) only teaching the rules of chess.
(C) financial management of the school.
(D) student counselling for academic subjects.

(B) the design of the sports team's logo.
(C) the architectural plan of the school.
(D) the format of the final exam paper.

244. In a comparative study, the professional preparation in physical education in germany is often linked to its strong:
(A) system of private and community sports clubs (vereinskultur).
(B) collegiate sports system like the ncaa.
(C) centralized soviet-era sports schools.
(D) national curriculum dictated by the monarchy.

245. Consider the following statements regarding the purpose of curriculum evaluation:
I. To determine the achievement of educational objectives.
II. To improve the curriculum for future use.
III. To assess the effectiveness of teaching strategies.
IV. To solely assign blame to teachers.
Which of the above statement(s) is/are correct?
(A) i and ii only
(B) i, ii, and iii only
(C) iv only
(D) i, ii, iii and iv

246. What is the most significant responsibility of a pe teacher at the primary level?
(A) to develop fundamental motor skills and a love for physical activity.
(B) to coach a team for international competition.
(C) to teach advanced concepts of sports psychology.
(D) to conduct doctoral-level research.

247. A curriculum that includes units on gymnastics, swimming, team sports, and athletics demonstrates the principle of:
(A) variety
(B) rigidity
(C) exclusion
(D) monotony

248. Read the statements given below and choose the correct option.
Statement I : a time-table is an essential organizational tool in physical education.
Statement II : a time-table is only used for recording the fastest race times and has no other purpose.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

249. The process of curriculum appraisal is best defined as:
(A) the act of writing the syllabus.
(B) the act of admitting students to a course.
(C) the systematic evaluation of a curriculum's value and effectiveness.
(D) the annual budget meeting for the department.

250. Consider the following key considerations in curriculum planning for physical education:
I. The age and developmental stage of the students.
II. The availability of facilities, equipment, and staff.
III. The overall goals and philosophy of the school.
IV. The needs and interests of the students.
V. The need to make the curriculum exactly the same as a rival school's.
Which of the above statement(s) is/are correct?
(A) i, ii, and iii only
(B) i, ii, iii, and iv only
(C) v only
(D) i and v only

Direction : Please read the following source carefully.

The development of teacher education in physical education within India necessitates a critical comparative analysis with established systems in other nations. A comparative study of professional preparation in physical education involving India and countries such as the USA, Russia, Germany, Australia, and the UK provides invaluable insights into diverse pedagogical models, curriculum structures, and accreditation standards. Such a study moves beyond mere description to an analytical examination of how different countries approach the training of physical education professionals. For instance, the emphasis on research and evidence-based practice in the USA and Australia contrasts with potentially more traditional or state-mandated

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access to physical education and sports for its citizens.
(A) both statement i and statement ii are true.
(B) both statement i and statement ii are false.
(C) statement i is true, but statement ii is false.
(D) statement i is false, but statement ii is true.

214. The importance of curriculum content selection lies in its ability to:
(A) ensure the learning objectives of the course are met.
(B) make the course as difficult as possible.
(C) use the least amount of resources.
(D) follow the personal preferences of the principal.

215. The following question consists of two statements—assertion (a) and reason (r). Answer the question by selecting the appropriate option.
Assertion (A) : an integrated programme for boys and girls is beneficial for social development.
Reason (R) : it provides opportunities for students to learn to cooperate, compete respectfully, and understand each other in a supervised, co-educational setting.
(A) both a and r are true and r is the correct explanation of a.
(B) both a and r are true but r is not the correct explanation of a.
(C) a is true but r is false.
(D) a is false but r is true.

216. Which is the most appropriate subject matter for physical education at the primary school level?
(A) fundamental motor skills through fun games and activities.
(B) advanced weight training periodization.
(C) biomechanical analysis of athletic techniques.
(D) sports law and ethics.

217. A time-table in physical education is not just a schedule, but a tool for:
(A) maximizing the effective use of limited time, space, and equipment.
(B) recording historical sporting achievements.
(C) measuring student height and weight.
(D) calculating the cost of sports equipment.

218. The development of physical education teacher training in india from 'drill masters' to holders of master's and doctoral degrees indicates:
(A) the professionalization of the field.
(B) the decline of the field.
(C) that practical skills are no longer important.
(D) that theory is the only thing that matters.

219. The 'credit system' in professional courses standardizes the:
(A) academic workload of a course.
(B) athletic ability of the students.
(C) uniform color of the institution.
(D) cost of the tuition fee.

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220. Consider the following statements regarding a comparative study of physical education professional preparation:
I. It helps in understanding the strengths and weaknesses of one's own system.
II. It often reveals the historical and cultural factors shaping each system.
III. The goal is to uncritically copy another country's system.
IV. It shows that all countries have identical systems.
Which of the above statement(s) is/are correct?
(A) i and ii only
(B) iii and iv only
(C) i, ii, and iii only
(D) ii and iv only

221. A physical education professional's responsibility in promoting wellness involves encouraging:
(A) an overall state of physical, mental, and social well-being.
(B) a sedentary lifestyle.
(C) the use of performance-enhancing drugs.
(D) unhealthy dietary habits.

222. The role of a government agency like the ugc in monitoring professional courses in physical education is to:
(A) ensure quality and standards in higher education.
(B) organize inter-school sports competitions.
(C) sponsor private sports teams.
(D) select the national cricket team.

223. Identify the incorrect statement. A well-planned curriculum should be:

for admission, course duration, and evaluation, these government agencies act as custodians of professional excellence. Their function is not merely bureaucratic but developmental, aiming to align teacher education with national educational goals and international standards, thereby ensuring that graduates are adequately prepared to meet the demands of the profession. This systematic monitoring is vital for the credibility and effectiveness of physical education as an academic discipline.

Based on the above source, attempt the following five questions.

256. What is the primary function of government agencies monitoring professional courses in physical education, as per the passage?
(A) To provide financial grants to all physical education institutions.
(B) To ensure quality, standardization, and academic integrity of the programs.
(C) To directly conduct entrance examinations for all professional courses.
(D) To market professional physical education courses to prospective students.

257. According to the paragraph, the role of government monitoring agencies is described as both:
(A) Regulatory and punitive.
(B) Optional and advisory.
(C) Commercial and promotional.
(D) Bureaucratic and developmental.

258. Which of the following responsibilities is NOT attributed to the government monitoring agencies in the text?
(A) Prescribing specific timetables for individual institutions.
(B) Setting minimum standards for faculty qualifications.
(C) Granting recognition to physical education institutions.
(D) Periodically reviewing programs to ensure relevance.

259. The passage suggests that without the oversight of government agencies, there would be a risk of:
(A) A decrease in the number of students enrolling in physical education.
(B) An overemphasis on practical skills at the expense of theory.
(C) The proliferation of substandard professional programs.
(D) A lack of diversity in the types of courses offered.

260. How do government agencies contribute to the credibility of physical education as an academic discipline?
(A) By establishing and enforcing benchmarks of quality and professional excellence.
(B) By organizing annual national sports competitions for universities.
(C) By providing scholarships to meritorious physical education students.
(D) By publishing research journals exclusively for faculty members.

Direction : Please read the following source carefully.

The effectiveness of physical education programs hinges significantly on the caliber of the personnel responsible for their implementation. A comprehensive understanding of the qualities, qualifications, and responsibilities of physical education personnel is crucial, particularly as these requirements vary across different educational strata: primary, secondary, and higher education. At the primary level, personnel require qualities such as patience, enthusiasm, and the ability to make activities fun and engaging, with qualifications focusing on foundational pedagogy and child development. Their primary responsibility is to develop fundamental motor skills and a positive attitude towards physical activity. At the secondary level, the responsibilities become more specialized, involving coaching specific sports, understanding adolescent physiology, and preparing students for competitive events. Qualifications here demand deeper subject matter knowledge and advanced pedagogical skills. In higher education, personnel are expected to possess advanced academic qualifications, often doctoral degrees, and their responsibilities extend beyond teaching to include research, curriculum development, and academic administration. The qualities sought at this level include scholarly aptitude, mentorship ability, and a commitment to advancing the discipline. Therefore, the role is not monolithic; it evolves

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of the educational process.
(D) To reduce the time allocated for physical education in the curriculum.

272. According to the paragraph, these government policies use physical education and sports as a tool for what larger purpose?
(A) Generating revenue for educational institutions.
(B) Achieving national development and fostering values in youth.
(C) Promoting a specific political ideology.
(D) Replacing academic subjects with sports training.

273. Which of the following is highlighted as a specific aim of the policies concerning talent?
(A) To send talented students abroad for all their training.
(B) To focus talent identification exclusively on a few popular sports.
(C) To provide talented athletes with guaranteed government jobs.
(D) To create a pathway for talent identification and development from the grassroots level.

274. The passage indicates that the policies are designed as part of a larger ecosystem. What does this ecosystem connect?
(A) It connects school-level activities with higher education and national sports structures.
(B) It connects only private sports academies with international clubs.
(C) It connects sports equipment manufacturers with schools.
(D) It connects retired athletes with media houses for commentary roles.

275. What is the overarching goal of the government policies mentioned in the text?
(A) To win the maximum number of medals in the next Olympic Games.
(B) To ensure every school has a stadium of international standards.
(C) To cultivate a sporting culture and improve the nation's health and fitness profile.
(D) To make physical education a purely theoretical subject.

Direction : Please read the following source carefully.

The effective administration and implementation of physical education programs within educational institutions depend on a clearly defined hierarchy of organizational set-up. This structure varies in complexity from schools to colleges and universities, but it universally serves to delineate roles, responsibilities, and channels of communication. At the school level, the set-up is often straightforward, typically involving a Head of the Physical Education Department who reports to the school Principal or Vice-Principal. This individual is responsible for curriculum delivery, managing facilities, and coordinating intra-mural activities. At the college level, the structure becomes more elaborate. A Head of Department oversees the academic and activity-based programs, but they may report to a Dean of Student Affairs or the Principal, and often work in conjunction with a college sports committee. At the university level, the hierarchy is the most complex. It usually features a Director of Physical Education and Sports who presides over the entire university system. This Director may oversee the departmental heads in constituent colleges, manage university-wide sports facilities, formulate sports policies, and report to a higher authority such as a Sports Council, a Dean, or the Vice-Chancellor. This hierarchical organization ensures systematic planning, efficient resource allocation, clear accountability, and coordinated execution of physical education and sports policies across the institution.

Based on the above source, attempt the following five questions.

276. What is the primary function of having a hierarchical organizational set-up for physical education?
(A) To delineate roles, responsibilities, and communication channels.
(B) To limit the autonomy of physical education teachers.
(C) To increase the administrative burden on teaching staff.
(D) To focus exclusively on inter-university competitions.

277. According to the paragraph, to whom does the Head of the Physical Education Department at a school level typically report?

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the public health ecosystem.

Based on the above source, attempt the following five questions.

266. What is the central argument of the paragraph regarding the scope of physical education personnel?
(A) Their role is shrinking due to an overemphasis on academic subjects.
(B) Their scope has expanded to include the promotion of health, fitness, and wellness.
(C) Their primary function remains exclusively the coaching of elite athletes.
(D) They are primarily responsible for managing sports infrastructure in schools.

267. According to the text, how do physical education personnel contribute to addressing contemporary health challenges?
(A) By focusing solely on competitive sports within the school curriculum.
(B) By designing programs to combat issues like obesity and sedentary behavior.
(C) By prescribing medication for lifestyle-related diseases.
(D) By limiting their activities strictly to the gymnasium.

268. The passage describes the evolving role of a physical education professional as transforming from a teacher of sport-specific skills to a:
(A) Wellness coordinator and health advocate.
(B) Sports journalist and commentator.
(C) School administrator and disciplinarian.
(D) Financial manager for sports teams.

269. Which area of expertise is mentioned as equipping physical education personnel for their expanded role in health promotion?
(A) Knowledge of historical sports trivia.
(B) Expertise in marketing and public relations.
(C) Expertise in exercise science, nutrition, and human physiology.
(D) Understanding of school administrative policies.

270. What is a key socio-economic contribution of physical education personnel in their wellness promotion role?
(A) Increasing ticket sales for professional sporting events.
(B) Securing corporate sponsorships for school sports teams.
(C) Managing the budget for the school's athletic department.
(D) Reducing public healthcare burdens by preventing lifestyle diseases.

Direction : Please read the following source carefully.

Recent government policies for promoting physical education and sports in India reflect a strategic shift towards a more holistic and integrated approach. The underlying objective of these policies is to move physical education from the periphery to the core of the educational process. A key thrust is to broaden the base of participation, ensuring that physical activity is accessible and inclusive for all students, regardless of their skill level or background. These policies aim to create a seamless pathway for talent identification and development, establishing a continuum from grassroots participation to elite performance. Furthermore, there is a clear intent to use physical education and sports as tools for national development, fostering values such as discipline, teamwork, and resilience among the youth. The policies emphasize the importance of creating safe and adequate infrastructure, training a larger pool of qualified coaches and teachers, and integrating sports science and technology into training methodologies. Rather than being isolated initiatives, these policies are designed to be part of a larger ecosystem that connects school-level activities with college, university, and national-level sports structures. The overarching goal is to cultivate a robust sporting culture and improve the overall health and fitness profile of the nation, recognizing physical education as an indispensable component of human resource development.

Based on the above source, attempt the following five questions.

271. What is the central objective of recent government policies for physical education as described in the passage?
(A) To prioritize only elite athlete development over mass participation.
(B) To commercialize school sports programs for profit.
(C) To integrate physical education into the core

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from a generalist at the primary level to a specialist and a scholar-practitioner at the secondary and higher education levels, respectively, demanding a dynamic set of competencies.

Based on the above source, attempt the following five questions.

261. According to the paragraph, how do the responsibilities of physical education personnel at the primary level differ from those at the secondary level?
(A) Primary level focuses on research and publication, while secondary focuses on coaching.
(B) Primary level focuses on elite athlete training, while secondary level focuses on general fitness.
(C) There is no significant difference in responsibilities between the two levels.
(D) Primary level focuses on fundamental motor skills, while secondary level is more specialized in sports.

262. What set of qualities is highlighted as being particularly important for personnel at the primary education level?
(A) Scholarly aptitude and research skills.
(B) Patience, enthusiasm, and the ability to make activities fun.
(C) Advanced knowledge of adolescent physiology.
(D) Experience in academic administration and curriculum design.

263. The paragraph suggests that the role of a physical education professional evolves as they move to higher levels of education. What is the described progression?
(A) From a specialist to a generalist.
(B) From a coach to an administrator.
(C) From a generalist to a specialist and scholar-practitioner.
(D) From a practitioner to a pure academic with no practical role.

264. What qualification is typically expected of physical education personnel at the higher education level, as mentioned in the text?
(A) A basic diploma in physical education.
(B) A bachelor's degree with a focus on child development.
(C) Certification in coaching a single specific sport.
(D) Advanced academic credentials, often including doctoral degrees.

265. Based on the passage, which statement accurately reflects the nature of the physical education personnel's role?
(A) The role demands a dynamic and evolving set of competencies based on the educational level.
(B) The role is monolithic and uniform across all educational levels.
(C) The qualifications required are identical for primary, secondary, and higher education.
(D) The primary responsibility at all levels is to produce elite athletes for national competition.

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Direction : Please read the following source carefully.

The scope of physical education personnel has expanded significantly beyond the traditional confines of gymnasiums and sports fields. Their role is increasingly recognized as pivotal in the broader public health mission of promoting health, fitness, and wellness. In this expanded capacity, physical education professionals act as key agents in fostering healthy lifestyles that extend beyond the school curriculum and into the community. Their expertise in exercise science, nutrition, and human physiology equips them to design and implement programs aimed at improving general fitness, preventing lifestyle-related diseases, and enhancing overall well-being. This scope includes conducting fitness assessments, providing personalized activity recommendations, and educating diverse populations about the benefits of a physically active life. They are no longer just teachers of sport-specific skills but are becoming wellness coordinators and health advocates. This role is crucial in addressing contemporary health challenges like obesity, stress, and sedentary behavior. By promoting health and wellness, physical education personnel contribute directly to improving the quality of life and reducing healthcare burdens, thereby underscoring the socio-economic importance of their profession. Their work in this domain helps to institutionalize a culture of fitness within schools and the wider community, making them indispensable assets in

(A) The University's Director of Sports.
(B) The College Sports Committee.
(C) The Dean of Student Affairs.
(D) The School Principal or Vice-Principal.

278. Which level of education is described as having the most complex organizational hierarchy for physical education?
(A) The primary school level.
(B) The university level.
(C) The secondary school level.
(D) The college level.

279. As per the passage, a key role of the Director of Physical Education at the university level includes:
(A) Directly teaching classes in all constituent colleges.
(B) Personally coaching all university sports teams.
(C) Formulating university-wide sports policies.

280. Which of the following is NOT mentioned as a benefit of a hierarchical organization in physical education?
(A) Systematic planning.
(B) Efficient resource allocation.
(C) Clear accountability.
(D) Guaranteed victories in competitions.

Direction : Please read the following source carefully.

The promotion of physical education and sports in India is a collaborative effort, significantly supported by both the public and private sectors. Each sector plays a distinct yet complementary role in fostering a robust sporting culture. The public sector, primarily comprising government bodies at the central, state, and local levels, is traditionally responsible for policy formulation, creating broad-based infrastructure, and ensuring access to physical education within the formal education system. It focuses on mass participation, grassroots development, and the implementation of national sports policies. The public sector's role is foundational, aiming to create an equitable environment where all citizens have the opportunity to engage in physical activities. On the other hand, the private sector, which includes corporations, sports management firms, and non-profit organizations, often brings in financial investment, professional management, and specialized expertise. Its contributions are evident in sponsoring athletes and events, establishing state-of-the-art training academies, developing professional sports leagues, and marketing sports to create wider appeal. While the public sector lays the groundwork and ensures inclusivity, the private sector often drives excellence, commercial viability, and innovation. The synergy between these two sectors is crucial for a holistic development model, where public policy and private enterprise work in tandem to elevate the status and reach of physical education and sports across the country.

Based on the above source, attempt the following five questions.

281. What is described as the foundational role of the public sector in promoting physical education?
(A) Creating policy, infrastructure, and ensuring broad-based access.
(B) Sponsoring high-profile international athletes.
(C) Developing professional sports leagues for commercial profit.
(D) Marketing sports to create wider consumer appeal.

282. According to the paragraph, what is a primary contribution of the private sector to sports promotion?
(A) Enforcing national sports policies in schools.
(B) Bringing financial investment, professional management, and specialized expertise.
(C) Ensuring equitable access for all citizens at the grassroots level.
(D) Overseeing physical education curriculum in the formal education system.

283. The paragraph suggests that the relationship between the public and private sectors is:
(A) Antagonistic and competitive.
(B) Complementary and synergistic.
(C) Entirely separate with no interaction.
(D) Hierarchical, with the private sector controlling the public sector.

284. Which phrase best captures the distinct focus of the public and private sectors as described in the text?
(A) Public sector focuses on participation;

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activities, managing large facilities, and ensuring the delivery of high-quality higher education.

8. (A) Rigidity and unchangeability
Effective curriculum planning in physical education is built upon several core pillars, including scientific foundations and community relevance. It must remain child-centered to ensure that student needs are prioritized. However, rigidity and unchangeability are contrary to good planning. A successful curriculum must be flexible and adaptable to accommodate changes in student interests, technological advancements, and new research in the field of sports science and pedagogy.

9. (C) USA - A diverse system with emphasis on scholastic and collegiate sports.
Professional preparation in the United States is characterized by its high degree of integration with the educational system. There is a significant emphasis on competitive athletics at both the high school and collegiate levels, often overseen by organizations like the NCAA. This system creates a vast network for talent development and provides numerous professional opportunities for physical education specialists, coaches, and sports administrators within academic institutions.

10. (A) P-3, Q-2, R-1, S-4
Different educational levels require distinct pedagogical focuses to meet student needs effectively. Primary education emphasizes fundamental motor skills and exploration through play. Secondary education introduces specific sports rules and team strategies as students mature. Higher education focuses on advanced sports science, coaching techniques, and research methodology. At the college level, the curriculum often helps students balance advanced sports participation with their demanding academic and professional pressures.

11. (D) A holistic state of well-being, including physical, mental, and social dimensions.
In the context of physical education, wellness refers to a comprehensive and multidimensional state of health. It transcends the mere absence of disease or injury, encompassing physical fitness, emotional resilience, and social competence. Physical education personnel promote wellness by encouraging students to adopt healthy lifestyles that integrate regular activity, proper nutrition, and positive social interactions. This holistic approach ensures that students develop the tools necessary for long-term health.

12. (B) A method for quantifying the workload of a course based on hours of study.
The credit system is a standardized academic tool used to measure the volume of learning within professional courses. It assigns numerical values to different units of study based on the time required for lectures, tutorials, and practical sessions. This system facilitates uniformity across various institutions and allows for the easy transfer of academic achievements. It provides a clear framework for students and administrators to track progress toward graduation.

13. (C) Conducting the final examinations for individual students.
Government monitoring agencies are primarily responsible for setting the broad framework and standards of professional courses. Their roles include granting institutional recognition and prescribing minimum requirements for infrastructure and curriculum. While they ensure that the educational environment meets specific quality benchmarks, they do not typically conduct final examinations for individual students. That responsibility generally remains with the affiliating university or the specific educational institution providing the degree.

14. (D) An advanced degree (e.g., Master's, Ph.D.) with research experience.
Teaching and leadership roles at the higher education level require a high degree of academic specialization. Professionals in these positions are expected to hold advanced degrees, such as a Master of Physical Education or a Doctorate. Research experience is also vital, as faculty members contribute to the scientific body of knowledge in fields like biomechanics and sports psychology. These qualifications ensure that university programs remain rigorous and evidence-based.

15. (A) Both A and R are true and R is the correct explanation of A.
Curriculum evaluation is a vital component of the educational cycle because it provides

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education and other academic subjects.
(C) Ensuring an equal number of male and female students in every class.
(D) Balancing the budget for equipment across different sports.

Direction : Please read the following source carefully.

The design of a physical education curriculum and its content requires careful consideration of learner diversity to ensure effectiveness and inclusivity. The importance of curriculum design lies in its ability to create meaningful and accessible learning experiences for every student. A key aspect of this is the selection and classification of subject matter with specific reference to the age, sex, and abilities of the pupils, including those who are differently abled. For instance, activities appropriate for a primary school child's developmental stage are vastly different from those suitable for an adolescent. Similarly, while promoting inclusivity, curriculum designers must be aware of physiological and developmental differences that may exist, adapting activities accordingly. A crucial concept in modern curriculum design is the development of an integrated programme for boys and girls. This approach moves away from traditional segregation and encourages co-educational participation in a wide range of activities, fostering mutual respect, cooperation, and equal opportunity. For differently abled pupils, the subject matter must be adapted or modified to ensure their safe and meaningful participation, focusing on their individual capabilities and potential for development. This process of differentiation is fundamental to creating an equitable learning environment where every child can succeed and develop a lifelong appreciation for physical activity.

Based on the above source, attempt the following five questions.

291. What is the primary reason for selecting and classifying subject matter with reference to age, sex, and ability?
(A) To simplify the teacher's lesson planning process.
(B) To segregate students into permanent, fixed ability groups.
(C) To create meaningful, accessible, and inclusive learning experiences.
(D) To reduce the amount of equipment needed for classes.

292. What is the main goal of an 'integrated programme for boys and girls' as described in the paragraph?
(A) To foster co-educational participation, cooperation, and equal opportunity.
(B) To ensure boys and girls compete against each other in all sports.
(C) To create separate but equal facilities for boys and girls.
(D) To design a curriculum that is exclusively focused on non-contact sports.

293. According to the text, how should the curriculum accommodate differently abled pupils?
(A) By exempting them from all physical education activities.
(B) By providing them with a separate, non-physical curriculum.
(C) By having them participate in the exact same activities as all other students without modification.
(D) By adapting or modifying subject matter for safe and meaningful participation.

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294. The process of adjusting the curriculum to meet the needs of diverse learners (age, sex, differently abled) is referred to as:
(A) Standardization.
(B) Differentiation.
(C) Segregation.
(D) Generalization.

295. The importance of curriculum design, as stated in the passage, is rooted in its ability to:
(A) Guarantee professional athletic careers for students.
(B) Align with international competitive standards exclusively.
(C) Create accessible learning experiences for every student.
(D) Prioritize team sports over individual activities.

Direction : Please read the following source carefully.

The effective delivery of a physical education curriculum is supported by various pedagogical

tools and frameworks, including teaching aids, structured credit systems, and modern technology. A well-constructed time-table is a fundamental teaching aid, ensuring that time is allocated efficiently for both theory and practical sessions and that facilities are used optimally. Beyond the schedule, the concept of a credit system is vital in formalizing physical education within the academic structure. By assigning credits to theory and practical courses, the subject gains academic weight and recognition, allowing for standardized evaluation and progression. The impact of technology in physical education and sports has been transformative. It serves as a powerful teaching aid, from video analysis software for skill correction to wearable devices for monitoring fitness levels. Technology enhances student engagement, provides objective data for performance assessment, and opens new avenues for instruction. Parallel to implementation is the critical process of curriculum evaluation. The concept of evaluation in this context is to systematically assess the effectiveness of the curriculum. Its purpose is not merely to grade students but to appraise the program itself—its objectives, content, and outcomes. The procedure involves collecting data, analyzing results, and making informed judgments to facilitate continuous improvement and ensure the curriculum remains relevant and effective.

Based on the above source, attempt the following five questions.

296. What role does a credit system play in physical education, according to the paragraph?
(A) It determines the salary of the physical education teacher.
(B) It serves as a method for students to pay for practical classes.
(C) It is used exclusively for enrolling in inter-university competitions.
(D) It formalizes the subject's academic weight and allows for standardized evaluation.

297. How is the impact of technology in physical education described in the passage?
(A) As a transformative force that enhances teaching and assessment.
(B) As a minor and insignificant development.
(C) As a costly and unnecessary addition.
(D) As a tool that reduces the need for qualified teachers.

298. What is the primary purpose of curriculum evaluation as mentioned in the text?
(A) To grade students' performance in final examinations.
(B) To appraise the effectiveness of the educational program for continuous improvement.
(C) To compare the performance of one institution against another.
(D) To identify the most talented athletes for scholarships.

299. Which of the following is mentioned as a fundamental teaching aid for efficient time and facility management?
(A) A credit system.
(B) A well-constructed time-table.
(C) Video analysis software.
(D) Wearable fitness devices.

300. The process of curriculum evaluation is primarily concerned with:
(A) The appraisal of the curriculum's objectives, content, and outcomes.
(B) The students' enjoyment of the activities.
(C) The cost-effectiveness of the sports equipment purchased.
(D) The popularity of the teacher among the students.

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ANSWERS

1. (B) A historical progression from basic training to specialized degree courses.
The historical development of physical education teacher training in India demonstrates a clear move from elementary certificate-based instruction toward comprehensive university degrees. Initially focused on basic drill and physical training, the system evolved to include specialized undergraduate and postgraduate courses. This progression highlights the professionalization of the field, ensuring that educators possess a deep understanding of both practical sports skills and theoretical sports science principles.

2. (A) A systematic process of designing and evaluating educational experiences.
Curriculum planning in physical education serves as a strategic blueprint for educational delivery. This process involves a continuous cycle of assessing learner needs, setting clear objectives, selecting appropriate activities, and establishing evaluation metrics. Rather than a static list of tasks, it is a dynamic framework that ensures logical progression and aligns educational outcomes with institutional goals to foster comprehensive student development and motor skill acquisition.

3. (C) Statement I is true, but Statement II is false.
National bodies such as the National Council for Teacher Education play a pivotal role in maintaining the integrity of professional physical education courses. These agencies establish rigorous standards for infrastructure, faculty qualifications, and instructional quality. Their mandate extends beyond financial assistance to include active oversight of curricula and syllabus frameworks. This ensures that academic programs across the country remain consistent and meet professional industry requirements.

4. (D) They should focus primarily on high-intensity competitive sports training.
Educators at the primary school level prioritize the development of fundamental movement patterns and basic motor skills through play-based learning. High-intensity competitive training is developmentally inappropriate for young children and can lead to burnout or injury. Instead, the focus remains on fostering a positive relationship with physical activity, introducing basic hygiene, and creating an inclusive environment where every child can explore movement safely and confidently.

5. (A) I, II, III, IV
The growth of professional preparation for physical educators in India followed a logical academic progression. It started with short-term certificate courses to meet immediate teaching needs. This was followed by the creation of specialized colleges dedicated to the field. Eventually, physical education was integrated as a recognized academic discipline within universities, ultimately leading to the establishment of doctoral programs for advanced scientific research and academic leadership.

6. (B) The principle of selecting subject matter based on age.
Designing a curriculum that transitions from basic locomotor skills for younger students to complex game strategies for older students exemplifies age-appropriate planning. This principle ensures that activities are aligned with the physical, cognitive, and emotional development of the learners. By selecting subject matter based on age, educators can provide challenging yet achievable tasks that promote steady skill progression while minimizing the risk of injury.

(D) A structured department with a Head/ Director, professors, and other faculty.
The organizational set-up of physical education at the university level follows a formal academic hierarchy. This structure typically includes a Director of Sports or a Head of Department who provides administrative and academic leadership. Under this leadership, professors, associate professors, and assistant professors manage teaching and research. This organized framework is essential for coordinating complex

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private sector focuses on excellence and commercial viability.
(B) Public sector focuses on excellence; private sector focuses on participation.
(C) Both sectors focus exclusively on grassroots development.
(D) Both sectors focus exclusively on professional sports leagues.

285. The passage implies that a holistic development model for sports requires:
(A) The complete privatization of all sports facilities and programs.
(B) The government to take over all functions currently handled by the private sector.
(C) The collaboration and tandem working of both public and private sectors.
(D) A reduction in government spending on sports to encourage private investment.

Direction : Please read the following source carefully.

Curriculum development in physical education is a systematic process guided by fundamental concepts and principles of curriculum planning. It is not an arbitrary collection of activities but a thoughtfully constructed plan designed to achieve specific educational outcomes. A core principle of this planning is learner-centricity, ensuring the curriculum is relevant, engaging, and appropriate for the developmental stage of the students. Another vital principle is progression, which dictates that learning experiences should be sequenced logically, moving from simple to complex skills and concepts over time. The curriculum must also be balanced, offering a wide variety of activities that cater to different interests and develop a broad range of skills, including motor, cognitive, and affective domains. The selection of subject matter is a critical component of this process and varies significantly across different levels of education. For primary education, the subject matter emphasizes fundamental movement skills, creative play, and basic health habits. At the secondary level, it transitions to more specialized sports skills, tactical understanding, and deeper concepts of fitness and wellness. In higher education, the subject matter becomes highly specialized and theoretical, focusing on areas like exercise physiology, sports biomechanics, research methodology, and curriculum theory itself, preparing students for professional and academic roles.

Based on the above source, attempt the following five questions.

286. Which concept is described as a core principle of curriculum planning in physical education?
(A) Teacher convenience.
(B) Cost minimization.
(C) Administrative simplicity.
(D) Learner-centricity.

287. What does the principle of 'progression' in curriculum planning entail?
(A) Offering the same activities every year to ensure mastery.
(B) Focusing only on the most complex skills from the beginning.
(C) Logically sequencing learning experiences from simple to complex.
(D) Allowing students to choose their sequence of learning randomly.

288. How does the subject matter for physical education typically differ between the primary and secondary levels?
(A) Primary focuses on theoretical concepts, while secondary focuses on play.
(B) Primary focuses on fundamental skills, while secondary involves more specialized sports and tactics.
(C) Primary focuses on competitive sports, while secondary focuses on fundamental movements.
(D) There is no difference in subject matter between the two levels.

289. According to the passage, the subject matter in higher education for physical education is characterized by being:
(A) Exclusively practical and activity-based.
(B) Focused on creative play and simple games.
(C) Identical to the curriculum at the secondary level.
(D) Highly specialized and theoretical.

290. What is the main idea conveyed by the principle of a 'balanced' curriculum in physical education?
(A) Offering a wide variety of activities to cater to different interests and skills.
(B) Balancing the time between physical

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necessary feedback for growth. By systematically assessing the program, educators can determine if the original learning objectives have been successfully met. This process identifies specific strengths and weaknesses, offering an objective basis for making improvements. Without evaluation, there is no reliable way to measure student progress or ensure that the curriculum remains effective over time.

16. (B) To promote gender equity, mutual respect, and social skills.
Integrated physical education programs for boys and girls are designed to create an inclusive environment that fosters social development. By participating together in thoughtfully planned activities, students learn to appreciate diverse perspectives and build mutual respect. These programs challenge gender stereotypes and help develop essential life skills like communication and cooperation. The focus remains on shared learning experiences that promote equality and prepare students for a balanced social life.

17. (B) Sponsoring sports events, teams, and establishing private academies.
The private sector plays an increasingly significant role in the promotion of sports and physical education through investment and professional management. By sponsoring high-profile events and teams, corporate entities increase the visibility and commercial viability of various sports. Additionally, the establishment of private sports academies provides specialized training and infrastructure that may supplement public efforts. This involvement often brings new technology and marketing expertise into the sports ecosystem.

18. (A) Russia's system historically emphasized mass participation and sports for all, linked to state objectives.
Historically, the Russian system of physical education was characterized by its strong link to national goals and state ideology. There was a heavy emphasis on mass participation through programs designed to create a physically strong and disciplined populace. This structured approach utilized specialized sports schools to identify and nurture elite talent from a young age, ensuring that athletic achievement served as a reflection of national strength and organizational efficiency.

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19. (C) Adaptation and modification of activities to ensure participation and safety.
Creating a curriculum for differently-abled pupils requires a focus on inclusion and accessibility. The primary principle involves adapting and modifying standard activities to suit the unique needs and abilities of each student. This approach ensures that all individuals can participate safely and effectively in physical education. By providing modified equipment or altered rules, teachers can create a supportive environment where every pupil can achieve personal growth and success.

20. (B) I, II, and III only
Technology has significantly transformed physical education by providing tools for objective assessment and increased engagement. Video feedback allows for precise performance analysis, while wearable devices monitor physiological data like heart rate to ensure safe exercise intensity. Gamification makes learning more interactive and motivating for students. While these tools enhance the educational experience, they are intended to support the teacher rather than replace the essential guidance and human connection provided by a professional coach.

21. (C) A structured schedule that allocates specific times for various activities and classes.
A time-table serves as an essential organizational tool for the efficient delivery of the physical education curriculum. It provides a structured framework that allocates specific time slots for various classes, practical sessions, and sports activities. By organizing the use of playgrounds, halls, and equipment, the time-table ensures that resources are utilized optimally. This systematic approach helps both students and teachers stay organized and ensures that all curricular areas are covered.

22. (B) Integrating sports and fitness into the daily school routine.
Recent government policies in India, such as the Fit India movement, aim to make physical activity an integral part of students' lives. The focus is on moving away from viewing sports as a purely extracurricular activity and instead

centered around a clear national curriculum. This system ensures that physical education is delivered consistently across schools and is subject to rigorous inspection frameworks. The focus on qualification frameworks provides a standardized pathway for teacher training and professional certification. This structured environment emphasizes accountability and ensures that all students receive a high-quality physical education that meets specific national standards for learning.

38. (B) The curriculum should consider physiological and sociological differences while promoting co-educational opportunities.
Classifying subject matter with reference to sex involves a balanced approach that recognizes both differences and similarities between genders. A modern curriculum should consider physiological variations and sociological contexts to ensure that activities are appropriate and safe for everyone. At the same time, it should promote co-educational opportunities that foster mutual respect and social skills. The goal is to provide equitable access to sports and physical activity while respecting the individual needs of all students.

39. (D) Its role is exclusively focused on sponsoring professional sports leagues for profit.
The public sector's role in promoting physical education is primarily focused on governance, policy-making, and providing widespread access. It establishes national sports bodies, formulates development policies, and funds infrastructure in educational institutions to benefit the general public. While it may support professional athletes, its mission is driven by social welfare and national health rather than profit. Sponsoring professional leagues for commercial gain is a characteristic of the private sector rather than a public responsibility.

40. (A) Both A and R are true and R is the correct explanation of A.
Technology has become an impactful tool in physical education by providing objective, real-time feedback. Devices like wearable fitness trackers allow students and teachers to monitor activity levels and heart rate data accurately. This information provides a scientific basis for assessing effort and physiological response, which can be used to personalize instruction and improve fitness outcomes. By making invisible physiological processes visible, technology enhances the educational experience and encourages students to take ownership of their fitness.

41. (C) To provide academic and administrative leadership to the department.
The Head of Department in a university setting plays a vital role in both academic and administrative management. Their responsibilities include overseeing the curriculum, supporting faculty research, and managing departmental resources. They provide strategic leadership to ensure that the department meets its educational goals and maintains high professional standards. While they may have a background in coaching, their primary focus is on the broad leadership of the department and its integration within the larger university structure.

42. (A) Bachelor of Physical Education (B.P.Ed.).
The Bachelor of Physical Education is recognized as the foundational professional qualification for teachers in India. This degree program provides comprehensive training in sports science, pedagogical methods, and various athletic disciplines. It equips individuals with the necessary skills to design and deliver effective physical education programs in schools. Obtaining a B.P.Ed. ensures that teachers have met specific professional standards and are qualified to manage the physical and educational development of students across different age groups.

43. (B) To identify strengths and weaknesses for program improvement.
The primary goal of curriculum evaluation is to gather objective evidence about the effectiveness of an educational program. By identifying specific strengths and weaknesses, educators can make informed decisions about how to refine and improve the curriculum. This process ensures that the program remains relevant and continues to meet the needs of the students. Evaluation is a constructive tool for growth, rather than a means of punishment or a simple bureaucratic exercise for ranking schools.

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30. (B) III, I, II, IV
The process of curriculum evaluation must follow a logical sequence to be effective. It begins with clearly defining the specific objectives that need to be assessed. Once the goals are established, educators collect relevant evidence and data through various assessment methods. This information is then analyzed to determine the curriculum's impact. Finally, based on these findings, judgments and recommendations are made to improve the program and better meet the needs of the students.

31. (A) College Principal
In the organizational structure of a college, the physical education department functions as an integral part of the institution. While the department has its own internal leadership, such as a Director of Physical Education, it remains under the overall administrative supervision of the College Principal. The Principal ensures that the department's activities align with the college's educational mission, manages budgetary allocations, and oversees the general welfare and conduct of both faculty and students.

32. (A) Topics like exercise physiology, sports psychology, and kinesiology.
Subject matter at the higher education level is characterized by a shift toward scientific and theoretical specialization. Students explore advanced disciplines such as exercise physiology, sports psychology, and kinesiology to understand the scientific principles governing human movement. This academic approach prepares individuals for professional careers in coaching, research, and sports management. The curriculum focuses on providing a deep, evidence-based understanding of the field, rather than just the mastery of basic motor skills or simple games.

33. (C) Student's medical insurance policy
Teaching aids are tools used by educators to enhance the learning process and clarify complex concepts. Items like cones, markers, video playback systems, and anatomical charts are direct aids that help students visualize and practice skills effectively. While a medical insurance policy is important for a student's safety and financial protection, it does not serve a pedagogical function in the delivery of physical education lessons. It is an administrative document rather than an instructional resource.

34. (A) Cause: Regular participation in physical activity. Effect: Improved cardiovascular health.
Physical education is based on scientific principles where specific actions lead to predictable outcomes. A clear cause-and-effect relationship exists between regular participation in moderate-to-vigorous physical activity and the improvement of cardiovascular health. Exercise strengthens the heart muscle and improves the efficiency of the circulatory system. This fundamental link is the primary justification for including regular physical activity in the school curriculum to ensure long-term wellness and prevent lifestyle-related health conditions among students.

35. (C) P-3, Q-1, R-4, S-2
Understanding various curriculum concepts requires recognizing their specific functions within the educational framework. Curriculum design focuses on the structural organization of content to ensure logical flow. Evaluation involves judging the worth of the program to guide future improvements. The credit system provides a standardized unit to quantify academic workloads, especially in higher education. Finally, integrated programs provide co-educational opportunities for boys and girls, fostering social development and mutual respect through shared participation in various activities.

36. (C) Educating students about the benefits of a healthy lifestyle and regular exercise.
Physical education professionals serve as vital health educators within the school system. Their primary responsibility in promoting health is to provide students with the knowledge and motivation to lead active lifestyles. This includes teaching the benefits of regular exercise, proper nutrition, and good hygiene habits. While they may provide first aid, their role is not to diagnose or treat medical conditions, but rather to empower students to make informed decisions that support long-term well-being.

37. (B) Emphasis on a national curriculum and qualifications frameworks (QCF).
Professional preparation in the United Kingdom is notable for its highly structured approach,

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integrating fitness into the daily school routine. These policies seek to combat sedentary lifestyles and promote a culture of health by ensuring that every student has regular opportunities for physical exercise and skill development.

23. (D) Primary Level - Advanced weight training and periodization.
Curriculum content must be developmentally appropriate for the age of the students. While primary level education should focus on movement exploration and fundamental motor skills, advanced weight training and complex periodization are entirely unsuitable for young children. Such activities require a level of physical maturity and specialized supervision that is only appropriate at much later stages of development. Primary programs should prioritize fun, safety, and the mastery of basic movements.

24. (A) The systematic collection and analysis of data to judge a curriculum's worth.
Curriculum appraisal is a comprehensive process used to evaluate the effectiveness and value of an educational program. It involves the systematic gathering of data through various methods, such as student assessments, teacher feedback, and direct observation. By analyzing this information, educators can make informed judgments about whether the curriculum is meeting its intended goals. This process is vital for ensuring quality and provides the evidence needed for meaningful curriculum improvement.

25. (B) I, II, III, and V only
Physical education teachers have a broad scope of responsibilities that extend well beyond just teaching sports skills. They play a critical role in promoting student health, developing essential social skills like teamwork, and organizing various competitive events. Their influence is intended for the entire student population, not just elite athletes. By managing equipment and planning diverse activities, they contribute to the comprehensive physical, mental, and social development of every student in the school.

26. (A) USA
The United States is well-known for its highly developed system of collegiate athletics, primarily governed by the NCAA. This system creates a powerful link between higher education and high-performance sport, allowing student-athletes to pursue degrees while competing at elite levels. This unique structure provides significant funding, professional coaching, and world-class facilities within university settings, making it a global model for the integration of competitive sports and scholastic achievement.

27. (C) Statement I is true, but Statement II is false.
Effective curriculum planning requires the careful selection and classification of subject matter to ensure logical progression. However, this selection is never independent of the learners' characteristics. Factors such as age, sex, and physical abilities are crucial considerations when deciding what content to include. A curriculum that ignores these variables will likely be ineffective or unsafe. Therefore, matching activities to the specific developmental needs of the pupils is fundamental to successful physical education teaching.

28. (B) Strong subject knowledge and pedagogical skills.
An effective physical education professional at the secondary level must possess a deep understanding of sports science and various athletic disciplines. Beyond subject knowledge, strong pedagogical skills are essential to communicate complex rules and strategies to adolescents. These teachers must also be able to manage diverse groups, ensure safety, and motivate students with varying interest levels. Their ability to deliver clear instructions and provide constructive feedback is key to fostering a productive learning environment.

29. (C) The organization of content, activities, and educational experiences.
Curriculum design refers to the deliberate and structural organization of an educational program. It involves deciding how content, activities, and learning experiences will be sequenced and integrated to achieve specific goals. A well-constructed design ensures that there is a logical flow to the learning process, allowing students to build upon their knowledge and skills over time. It serves as the blueprint that guides teachers in delivering a coherent and comprehensive education.

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44. (B) Individualized Education Program (IEP) considerations.
Developing a curriculum for differently-abled pupils requires a highly personalized approach. A key component is the use of Individualized Education Programs, which tailor learning objectives and activities to the specific needs and abilities of each student. This ensures that every child can participate safely and make meaningful progress. By focusing on individualized goals, educators can provide the necessary modifications and support to foster inclusion and help every student achieve their full potential in physical education.

45. (B) I, II, and III only
Qualified physical education personnel must possess a blend of academic knowledge and personal qualities. A strong foundation in sports sciences is crucial for providing evidence-based instruction, especially at the higher education level. Effective communication skills are essential for teaching and motivating students of all ages. Additionally, personal fitness and a genuine passion for the subject help teachers serve as positive role models. These attributes are necessary to inspire students and maintain a safe, professional, and engaging learning environment.

46. (D) Curriculum Evaluation
To determine if a new physical education curriculum has successfully met its objectives, a school must engage in curriculum evaluation. This systematic process involves collecting and analyzing data, such as student fitness scores and teacher feedback, to judge the program's effectiveness. Evaluation provides the objective evidence needed to understand whether the curriculum is achieving its goals. It allows administrators to make data-driven decisions about whether to continue, modify, or replace the existing educational framework for better results.

47. (B) The "Turnverein" movement started by Friedrich Ludwig Jahn.
The German system of physical education has deep historical roots in the Turnverein movement, founded by Friedrich Ludwig Jahn in the early nineteenth century. This movement emphasized gymnastics and physical training as a means of building national strength and character. Jahn's work introduced various apparatuses and structured exercises that became fundamental to modern physical education. The legacy of this movement continues to influence German sports culture, emphasizing community involvement and a strong foundation in physical fitness for all citizens.

48. (A) Both Statement I and Statement II are true.
The promotion of physical education in India involves a partnership between the public and private sectors. The government focuses on policy-making, setting national standards, and providing widespread access through public schools. Meanwhile, the private sector contributes through corporate social responsibility initiatives, commercial sponsorships, and the establishment of specialized academies. While their motivations differ, their efforts often overlap to create a more robust sports ecosystem that provides diverse opportunities for participation and talent development across the nation.

49. (A) Combat sedentary lifestyles and related health issues.
Modern government policies in India prioritize physical education as a crucial tool for improving public health. The primary objective is to combat the rise of sedentary lifestyles and the associated health issues among children and youth. By integrating sports and fitness into the core curriculum, these policies aim to encourage lifelong habits of physical activity. This approach recognizes that a physically active student population is essential for a healthy, productive nation and reduces the long-term burden of chronic diseases.

50. (A) I, III, and IV only
Effective curriculum planning in physical education is guided by several student-centered principles. A good curriculum must be based on the specific needs, interests, and abilities of the learners to ensure engagement. It should offer a wide variety of activities to cater to diverse student preferences and have clear, achievable objectives to measure success. Furthermore, a successful curriculum must be flexible and take into account the available facilities and equipment to ensure that the planned activities can be implemented realistically.

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ensures that every student can participate and be challenged at their own level. This might include using different equipment, altering rules, or adjusting the intensity of the task. This inclusive approach respects the individual needs of all pupils and fosters a supportive environment where everyone can achieve personal success.

65. (A) Both A and R are true and R is the correct explanation of A.
A clear organizational hierarchy is vital for the successful management of physical education programs in schools and colleges. By defining specific roles and responsibilities, the structure ensures that every staff member knows their duties and who they report to. This clarity improves communication and streamlines decision-making, leading to the more effective implementation of the curriculum. A well-organized department can better manage facilities, coordinate events, and respond to student needs, ultimately enhancing the overall quality of the educational experience.

66. (C) Principle of Inflexibility
Successful curriculum planning is based on principles that ensure the program is useful, student-centered, and well-integrated. A curriculum must be flexible and adaptable to changing circumstances, new research, and student feedback. Inflexibility is a major obstacle to educational growth and prevents the program from evolving to meet the needs of the learners. Therefore, a rigid and unchanging approach is contrary to the core principles of effective curriculum development, which require a dynamic and responsive framework for teaching and learning.

67. (B) A historical emphasis on creating a strong, physically adept populace for state purposes.
The historical Russian system of physical education was deeply integrated with state goals, aiming to develop a strong and disciplined citizenry. This was achieved through a highly structured and centralized approach that included mass participation programs and specialized sports schools. These schools identified talented children early and provided intensive, state-sponsored training to achieve international success. This model emphasized the importance of physical fitness as a reflection of national strength and was used to achieve broader social and political objectives.

68. (A) A certificate or diploma in physical education (e.g., C.P.Ed./D.P.Ed.).
In India, the basic professional qualification for a physical education teacher at the primary school level is typically a certificate or diploma in the field. Programs like the C.P.Ed. or D.P.Ed. provide foundational training in fundamental motor skills, children's games, and basic pedagogical techniques. These qualifications ensure that teachers have the specific skills needed to manage young children and introduce them to the joy of movement in a safe and developmentally appropriate manner, laying the groundwork for future athletic participation.

69. (B) Establishing and running high-performance sports academies and leagues.
The private sector significantly promotes sports by providing specialized infrastructure and professional competition platforms. Private sports academies offer high-quality coaching and world-class facilities for athletes looking to specialize in specific disciplines. Additionally, the creation of professional sports leagues increases public interest and provides a commercial base for sports development. This involvement complements government efforts by focusing on high-performance areas and professional management, which can lead to greater international success and professional opportunities for athletes and support personnel.

70. (A) I and II only
Curriculum design and content are fundamental to the success of any physical education program. A logical design ensures that learning progresses in a coherent way, building student skills over time. The specific content selected is equally important, as it determines what knowledge and skills students will actually acquire. Together, design and content provide the necessary framework for teachers to deliver high-quality instruction. Ignoring these elements or neglecting student interest leads to a disconnected and ineffective curriculum that fails to achieve its educational goals.

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qualifications, infrastructure, and curriculum content. By regulating these institutions, the NCTE ensures that future physical education teachers receive a consistent and high-quality professional preparation across the country.

58. (C) It is a continuous and dynamic process that involves planning, implementation, and evaluation.
Curriculum planning is never a one-time event; it is an ongoing, dynamic process essential for educational success. It begins with careful planning based on student needs and goals, followed by the actual implementation in the classroom or playground. The cycle is completed by systematic evaluation, which provide feedback for the next round of planning. This continuous loop allows the curriculum to remain relevant, effective, and responsive to changes in the educational environment and student interests over time.

59. (B) Teaching advanced tactics, techniques, and rules of various sports.
As students progress to the secondary level, the physical education curriculum shifts from fundamental movements to more complex athletic concepts. Teachers at this level are responsible for instructing students in the specific tactics, advanced techniques, and official rules of various individual and team sports. This stage of education aims to refine skills and provide a deeper understanding of game play. It also includes teaching fitness principles and health concepts, preparing students for more specialized sports participation and lifelong fitness habits.

60. (B) P-2, Q-4, R-1, S-3
International systems of professional preparation for physical education reflect unique historical legacies and organizational priorities. The USA is characterized by its influential system of collegiate sports integrated with higher education. Russia has a heritage of highly structured, state-sponsored sports schools focused on elite talent. Germany's system is shaped by the historical Turnverein movement. India's evolving system is managed through specialized institutions like LNIPE and regulated by the NCTE to ensure academic and professional standards are consistently met.

61. (A) To ensure that the activities are developmentally appropriate and safe.
Classifying subject matter according to age is crucial because children's physical, cognitive, and emotional abilities change as they grow. Activities that are too advanced can lead to frustration or injury, while those that are too simple may fail to engage older students. By matching tasks to a student's developmental stage, educators ensure that the learning process is both safe and effective. This approach allows for a logical progression of skills that supports healthy growth and long-term interest in physical activity.

62. (A) Using an app on a tablet to provide instant video feedback on a student's basketball jump shot.
The use of digital tools like tablets and specialized apps for instant video feedback is a clear example of technology's impact in physical education. This technology allows students to see their own performance immediately, making abstract biomechanical concepts easier to understand. Teachers can use slow-motion and annotation features to highlight specific areas for improvement. This real-time, visual feedback accelerates skill acquisition and helps students refine their techniques more precisely than traditional verbal instructions alone could achieve.

63. (B) Focused on governance, policy-making, and providing widespread access.
The public sector's role in physical education is driven by social welfare and national health objectives. Government bodies are responsible for creating the policies and laws that govern sports and education at the national level. They provide the funding and infrastructure for physical education in public schools and colleges, ensuring that all citizens have access to fitness opportunities. This high-level governance ensures that physical education remains a standardized and equitable part of the national educational framework for the benefit of all.

64. (C) Create modified versions of the activity with different levels of challenge.
To effectively teach a class with a wide range of abilities, a physical education professional must apply the principle of differentiation. By creating modified versions of an activity, the teacher

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51. (C) It provides precise, quantitative feedback for skill refinement.
The integration of technology like motion analysis software has revolutionized the way skills are taught and refined in physical education. This technology provides precise, quantitative data on an athlete's movement, allowing for minute adjustments that improve performance and efficiency. By visualizing biomechanical patterns that are invisible to the naked eye, teachers can provide highly specific feedback. This scientific approach helps students master complex techniques more effectively and reduces the risk of injury caused by improper movement patterns.

52. (B) Helping individuals develop and maintain components of physical fitness like strength, endurance, and flexibility.
The primary role of a physical education professional in promoting fitness is to guide students in developing the key components of physical health. This involves designing and implementing programs that improve muscular strength, cardiovascular endurance, and flexibility. By teaching proper exercise techniques and principles, educators empower individuals to maintain their own fitness throughout their lives. This focus is on long-term health and functional ability, rather than just athletic performance or aesthetic appearance, ensuring a foundation for overall wellness.

53. (B) A strong focus on sport science and coaching education within its university system.
Australia's professional preparation for physical education is globally recognized for its heavy emphasis on sports science and high-performance coaching. The university system is deeply integrated with research and professional practice, producing specialists who are experts in biomechanics, physiology, and sports management. This scientific focus is supported by national institutes that bridge the gap between academic study and elite athletic performance. Consequently, physical education professionals in Australia are highly trained in both educational pedagogy and advanced sports sciences.

54. (B) Making an informed judgment about the value or effectiveness of the curriculum.
Curriculum appraisal is a critical part of the evaluation process that involves making value judgments about an educational program. It goes beyond mere data collection to determine whether the curriculum is achieving its intended outcomes and whether it is worth continuing in its current form. By appraising the curriculum, educators can identify areas where the program is succeeding and where it needs adjustment. This thoughtful assessment ensures that the educational experience remains high-quality and effective for all students.

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55. (A) II, I, IV, III
A large school's physical education department typically follows a hierarchical structure to ensure efficient management. The Head of Department provides overall leadership and administrative oversight. Physical Education Teachers are responsible for delivering the core curriculum and managing daily classes. Specialized Sports Coaches provide expert training in specific disciplines, often for school teams. Assistant teachers support the primary faculty in conducting activities and managing equipment. This structure ensures clear roles and responsibilities for all staff members involved in the program.

56. (B) A thoughtfully planned curriculum with co-educational activities designed to foster mutual respect and learning.
An integrated program for boys and girls is a pedagogical approach that emphasizes co-education and inclusion. It involves carefully selecting and modifying activities to ensure that all students can participate together safely and effectively. The goal is to promote gender equity and social development by encouraging students to cooperate and respect one another regardless of gender. These programs prepare students for real-world social interactions and help to dismantle harmful stereotypes through shared physical challenges and teamwork.

57. (B) Setting norms and standards for teacher education courses, including B.P.Ed.
The National Council for Teacher Education is the primary regulatory body in India responsible for maintaining the quality of teacher education. In the field of physical education, the NCTE sets the mandatory norms and standards for professional degrees such as the B.P.Ed. and M.P.Ed. This includes specifying requirements for faculty

71. (A) Standardize the academic value and workload of different courses.
The credit system in higher education serves as a standardized method for quantifying the amount of work required for different courses. It assigns numerical values based on the hours of study, including lectures and practical sessions. This system allows for the easy comparison of different programs and facilitates the transfer of credits between institutions. By providing a clear and consistent measure of academic workload, the credit system helps maintain educational standards and provides a transparent record of a student's progress and achievements.

72. (A) Build a seamless structure from grassroots to elite sports and encourage a sports culture.
Recent government initiatives like 'Khelo India' are designed to revitalize the sports ecosystem in the country. The policy focuses on identifying and nurturing talent at the grassroots level and providing a clear pathway to elite performance. By building better infrastructure and organizing national-level competitions for youth, the program aims to foster a strong sports culture. This holistic approach seeks to ensure that talented athletes from all backgrounds have the support and opportunities needed to represent the nation at the highest levels.

73. (A) The need to balance skill development, fitness, and recreational aspects.
Selecting subject matter for secondary school students requires a comprehensive approach that addresses multiple areas of development. A balanced curriculum should include opportunities for skill mastery in various sports, activities that improve physical fitness, and recreational options that encourage lifelong participation. This balanced focus ensures that the program is engaging and meets the diverse needs of all students. By considering these three pillars, educators can provide a well-rounded physical education that supports both athletic achievement and overall health and wellness.

74. (A) Both Statement I and Statement II are true.
A time-table is a vital teaching aid because it provides the necessary structure for the daily delivery of physical education. It ensures that time, facilities, and equipment are used efficiently, preventing conflicts and maximizing the opportunity for students to be active. A well-designed schedule allows teachers to plan their lessons effectively and ensures that all parts of the curriculum are covered systematically. This organized approach is essential for the smooth functioning of any department and enhances the overall quality of the instruction.

75. (B) II, III, and IV only
Physical education professionals have diverse responsibilities that extend beyond the classroom. They contribute significantly to students' overall wellness, including their social and mental health. Managing and maintaining sports equipment and facilities is a key administrative task that ensures a safe and effective learning environment. Additionally, they play a crucial role in talent identification and development. Their work encompasses both educational and administrative duties, all of which are aimed at promoting health, fitness, and athletic achievement within the school community.

76. (A) A comprehensive assessment using various tools like surveys, observation, and performance tests.
Curriculum appraisal is a detailed process that requires a comprehensive approach to data collection. Educators use various tools, such as student surveys, teacher observations, and performance tests, to gather a wide range of information about the program's impact. This multifaceted assessment provides a clear picture of what is working and what needs improvement. By using diverse data sources, administrators can make informed and objective decisions about the curriculum, ensuring that it remains effective and meets the needs of all students.

77. (B) The process of making judgments about the merit or worth of a curriculum.
Curriculum evaluation is a vital educational process focused on assessing the value and effectiveness of a program. It involves analyzing collected data to make informed judgments about whether the curriculum is meeting its intended goals and objectives. This process is essential for ensuring quality and providing a basis for continuous improvement. Evaluation is more than just measuring student performance; it is a holistic assessment of the entire educational

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experience, used to guide future planning and ensure that the program remains high-quality.

78. (A) Encourage a balanced approach to life that includes physical activity, nutrition, and stress management.
Promoting wellness is a key responsibility of physical education professionals. This role involves educating students about a balanced lifestyle that goes beyond just physical exercise. Educators teach the importance of proper nutrition, adequate sleep, and effective stress management techniques. By encouraging a holistic approach to health, they help students develop the habits necessary for long-term well-being. This proactive focus on healthy living empowers students to take responsibility for their own health and improves their overall quality of life both inside and outside of school.

79. (C) The USA has a more decentralized system with significant variations among states and institutions.
Professional preparation in the United States is characterized by its decentralized nature, where education is primarily a state responsibility. This leads to significant variations in curriculum and certification requirements across different states and universities. While national organizations provide guidelines, each institution has the flexibility to design its own programs. This diversity allows for innovation and local adaptation but also means that professional standards can vary significantly. A comparative study would highlight this flexibility and the diverse range of higher education programs available in the field.

80. (C) It must be exactly the same as for able-bodied pupils, without any modification.
A curriculum for differently-abled pupils must prioritize inclusion through adaptation and flexibility. It is incorrect and often unsafe to expect students with physical or cognitive challenges to follow the exact same program as their able-bodied peers without any modification. Effective teaching for these students involves adjusting activities, equipment, and rules to ensure participation and safety. The goal is to provide a supportive environment where every student, regardless of their ability level, can experience the benefits of physical activity and achieve personal growth.

81. (B) The content, knowledge, and skills of specific sports and activities.
A subject-centered curriculum design prioritizes the transmission of specific knowledge and skills within the field of physical education. The focus is on the mastery of particular sports, their rules, techniques, and historical context. This approach ensures that students gain a solid foundation in various athletic disciplines. While student interests are important, the primary driver of this design is the structure of the subject itself. This design is often used at the secondary and higher education levels where in-depth specialization in specific areas of sport is required.

82. (A) The Headmaster/Principal.
Within the school's organizational hierarchy, the Physical Education Teacher is an integral member of the academic staff. They report directly to the Headmaster or Principal, who is responsible for the overall management of the school. This relationship ensures that the physical education program is aligned with the school's educational goals and policies. The Principal oversees the PET's performance, manages the department's budget, and provides the administrative support needed to deliver a safe and effective curriculum for all students within the school community.

83. (B) Conducting research and publishing scholarly articles in the field.
Professionals at the higher education level are expected to contribute to the academic advancement of physical education. A direct and key responsibility of university faculty is to conduct original research and publish their findings in scholarly journals. This work helps to build the scientific foundation of the field in areas like kinesiology, sports management, and exercise science. By engaging in research, these professionals ensure that the discipline remains evidence-based and contributes to the broader academic community while training the next generation of experts.

84. (C) The natural color of the playground grass.
Technology has a wide-ranging impact on physical education, from biomechanical analysis to the use of e-learning tools and wearable

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monitors. These advancements provide objective data that helps improve performance and increase engagement. However, the natural color of the playground grass is an environmental factor that is unrelated to technological innovation or its application in teaching and coaching. While the quality of the playing surface is important for safety and performance, it is not a direct result of the impactful use of educational or sports technology.

85. (A) P-3, Q-4, R-1, S-2
Various terms in the physical education curriculum are essential for its organized delivery and evaluation. A time-table is crucial for scheduling classes and managing the use of shared facilities. The credit system provides a way to quantify student workloads, particularly in professional higher education courses. The impact of technology is seen in the use of sophisticated software for performance analysis and skill refinement. Finally, curriculum appraisal is the formal procedure used to judge the effectiveness of the program and guide future improvements for student success.

86. (A) Grassroots talent identification.
A central pillar of current government sports policies in India is the focus on grassroots talent identification. Programs like 'Khelo India' are designed to find talented young athletes in rural and urban areas and provide them with the support needed to succeed. By investing in early development and building a strong foundation, the government aims to create a sustainable pipeline of talent for national and international competitions. This approach ensures that potential is recognized early and nurtured through specialized training and infrastructure.

87. (A) Master of Physical Education (M.P.Ed.).
The Master of Physical Education is a professional post-graduate degree in India that is typically pursued after completing a bachelor's program like the B.P.Ed. This course provides advanced training in sports management, research methodology, and specialized sports sciences. It is designed to prepare individuals for leadership roles in administration, higher education, and advanced coaching. Obtaining an M.P.Ed. is a significant step for professionals seeking to deepen their expertise and contribute to the academic and scientific development of physical education as a disciplined career path.

88. (C) Reinforcement of gender stereotypes.
Integrated physical education programs for boys and girls provide numerous social and pedagogical benefits. They foster mutual respect, improve communication, and enhance social skills through shared learning experiences. These programs are designed to be inclusive and offer modified activities that ensure everyone can participate. One of the main goals of integration is to challenge and dismantle gender stereotypes, rather than reinforce them. By working together toward common goals, students learn to see each other as capable individuals, promoting a more equitable and respectful school environment.

89. (C) Fun, exploration of movement, and development of fundamental motor skills.
At the primary level, the physical education curriculum is designed to be foundational and developmentally appropriate. The focus is on movement exploration and the development of fundamental motor skills, such as running, jumping, and throwing, through fun games and activities. This approach encourages children to enjoy physical activity and builds their confidence in their own abilities. By prioritizing play and exploration, educators lay the groundwork for a lifetime of healthy activity and prepare students for more specialized sports and fitness programs as they mature.

90. (A) Both A and R are true and R is the correct explanation of A.
Considering age in the selection and classification of subject matter is essential for effective teaching in physical education. Children at different developmental stages have vastly different physical, cognitive, and emotional needs. Activities that are appropriate for a secondary student might be unsafe or confusing for a primary student. By matching the curriculum to the students' developmental levels, educators can provide challenging yet achievable tasks that support healthy growth. This ensures that the instruction is both effective and safe, fostering a positive learning experience for all.

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professional development reflects a commitment to providing the best possible education for their students and maintaining the high standards of their profession.

104. (A) The influence of Germany's sport club system versus India's school- and college-centric approach.
A comparative study of India and Germany would highlight significant differences in how their sports systems are structured. Germany has a powerful and historical system of community-based sports clubs, which serve as the primary hub for athletic participation and talent development. In contrast, India's system is traditionally more centered around schools and colleges. Exploring these different models helps educators understand how different cultural and organizational structures impact professional preparation and sports promotion, providing valuable perspectives on how to improve and adapt their own national systems.

105. (B) IV, II, I, III
The logical execution of the curricular process begins with a needs assessment to understand student requirements and institutional goals. Based on these findings, the curriculum is then planned and designed. Once the design is complete, it is implemented through daily teaching and activities. The final stage is systematic evaluation, which provide feedback on the program's effectiveness. This logical order ensures that the curriculum is evidence-based and responsive, leading to a more effective and meaningful educational experience for all participating students.

106. (A) It provides a coherent and logical framework for the educational experience.
Curriculum design is fundamentally important because it provides the structure and organization needed for effective learning. It ensures that content and activities are sequenced logically, allowing students to build upon their knowledge and skills in a progressive way. A well-designed curriculum prevents a fragmented educational experience and ensures that all activities are aligned with specific learning goals. This coherent framework guides teachers in their daily instruction and provides a clear roadmap for students to achieve their educational and physical developmental objectives.

107. (A) Performing advanced biomechanical research for a doctoral thesis.
Physical education teachers at the secondary level have many responsibilities, including instruction in sports rules, conducting fitness assessments, and managing intramural programs. These tasks are central to the daily operation of a school's physical education department. While staying informed about research is important, conducting advanced, doctoral-level biomechanical research is a specialized task typically reserved for university researchers and doctoral candidates. It is not a standard responsibility for school-level personnel, whose primary focus remains on the educational development and health of their students in a school setting.

108. (A) The establishment of key institutions like the Lakshmibai National College of Physical Education (LNCPE/LNIPE).
The development of physical education teacher education in India has been significantly shaped by the creation of specialized institutions. The establishment of the Lakshmibai National College of Physical Education provided a model for high-quality professional preparation, emphasizing both practical skills and academic rigor. These institutions have played a critical role in standardizing teacher training and promoting physical education as a respected academic discipline. Their influence has been instrumental in the move from rudimentary training to the sophisticated degree and research programs available in India today.

109. (C) Statement I is true, but Statement II is false.
Integrated physical education programs require careful planning to ensure that activities are appropriate and beneficial for mixed-gender groups. The primary goal is to foster an inclusive environment where all students can learn and compete respectfully. This promotes social development and gender equity. Conversely, the idea that the goal is to create an unsafe or overly competitive environment is entirely false. Modern physical education aims to provide a supportive and safe space for all students to develop their physical and social skills together through shared participation.

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and scientific inquiry. Students in these programs explore complex topics such as research methodology, which equips them to conduct scientific studies. They also study sports management to understand the administrative side of athletics and exercise prescription for clinical and high-performance settings. This academic rigor prepares students for specialized careers in administration, research, and advanced coaching, moving beyond the practical skills of the playground to a deep theoretical understanding of the discipline.

98. (A) Conducting large-scale awareness campaigns on the importance of physical activity.
Physical education professionals have a broad scope in health promotion that includes educating the community about the importance of an active lifestyle. They can lead large-scale awareness campaigns that highlight the benefits of regular exercise for preventing chronic diseases and improving overall well-being. By advocating for health and fitness within the school and the wider community, they serve as vital public health influencers. Their role is to provide the knowledge and motivation needed for individuals of all ages to adopt and maintain healthy habits for life.

99. (A) Measure the quantum of work in a course, encompassing lectures, tutorials, and practicals.
The credit system in professional physical education programs is a standardized unit used to measure the total workload required for a course. It takes into account the time spent in lectures, tutorials, and practical sessions on the field. This system provides a clear way to quantify academic achievement and ensures consistency across different institutions. By using credits, administrators can easily track student progress and facilitate the transfer of academic records. It provides a transparent framework for measuring the academic value and rigor of each course unit.

100. (B) I, II, III, and IV only
Planning a comprehensive physical education curriculum requires considering several key environmental and personal factors. Educators must take into account the age and sex of the pupils, the available facilities and equipment, and the expertise of the staff. Regional climatic conditions are also important for planning outdoor activities. A successful curriculum must be flexible and responsive to these factors. In contrast, making a curriculum rigid and unchangeable would be detrimental, as it would prevent the program from adapting to student needs and new educational developments.

101. (A) Clearly defining the purpose and objectives of the evaluation.
The first and most critical step in curriculum evaluation is to clearly define what is being assessed and why. By establishing clear purposes and objectives, educators can determine what data needs to be collected and which tools will be most effective. This initial planning ensures that the evaluation is focused and meaningful, providing the specific information needed to make informed decisions about the program. Without well-defined goals, the evaluation process can become aimless and fail to provide the insights necessary for meaningful curriculum improvement.

102. (A) The hierarchy helps in clear delegation of authority and responsibility.
A structured organizational set-up is essential for the effective management of physical education programs. A clear hierarchy defines the lines of authority and responsibility, ensuring that every staff member understands their role and who they are accountable to. This organizational clarity facilitates smoother communication, improves decision-making, and leads to the more efficient use of resources. By delegating tasks effectively, the department can better manage daily classes, organize events, and maintain facilities, ultimately creating a more professional and effective educational environment for the students.

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103. (A) Commitment to continuous professional development and learning.
A responsible physical education professional demonstrates a strong commitment to lifelong learning and continuous professional growth. The field of sports science and pedagogy is constantly evolving, and teachers must stay updated with new research and best practices. By attending workshops, pursuing advanced degrees, and staying current with industry trends, they ensure that their teaching remains effective and evidence-based. This dedication to

and playful is essential for building a positive relationship with movement early in life. These qualities help create a supportive and enjoyable learning environment where children feel comfortable exploring their physical abilities and developing the fundamental motor skills they need for the future.

117. (A) The principle of flexibility to adapt to changing needs.
A core principle of curriculum planning in physical education is the need for flexibility. A successful curriculum must be able to adapt to changing student needs, interests, and new developments in the field of sports science. This flexibility allows teachers to modify their plans based on student feedback and current environmental factors. By remaining responsive and adaptable, the curriculum remains relevant and effective, ensuring that it continues to provide a meaningful and engaging educational experience for all students over time.

118. (A) School pet → college director of pe → university director of pe.
The organizational hierarchy of the Indian physical education system generally reflects a progression from local school settings to larger higher education institutions. A Physical Education Teacher works at the school level, while a Director of Physical Education manages programs at the college level. The highest level of responsibility within this educational structure is the University Director of Physical Education, who oversees large-scale sports programs, academic departments, and inter-collegiate competitions. This structure ensures clear lines of authority and organized sports development across all educational stages.

119. (A) Understand different approaches, learn from best practices, and gain perspective on one's own system.
Comparative studies in professional preparation allow educators to explore how different countries approach physical education and teacher training. The goal is to identify best practices and gain a broader perspective that can be used to improve one's own national system. By understanding the diverse cultural and organizational factors that shape different systems, educators can make more informed decisions about curriculum design and professional standards. This process encourages innovation and global awareness, helping to advance the field through the shared knowledge of different educational models.

120. (D) I, II, III, AND IV
Curriculum evaluation in physical education serves several critical purposes for educational quality. It determines whether students are achieving the intended learning objectives and provides the feedback necessary to improve the program. Evaluation also allows administrators to assess the effectiveness of different teaching methods and serves as a basis for accountability within the institution. By systematically gathering and analyzing data, educators can ensure that the curriculum remains effective, evidence-based, and focused on achieving the best possible outcomes for all students and the department.

121. (C) Analyze performance with a high degree of precision.
One of the most significant impacts of technology in sports is the ability to conduct highly precise performance analysis. Tools like high-speed cameras and sophisticated software allow coaches and athletes to break down movements in minute detail. This level of precision helps identify subtle technical errors and areas for improvement that would be impossible to see with the naked eye. By providing objective data and visual evidence, technology enables athletes to refine their skills more effectively, leading to improved performance and a more scientific approach to coaching.

122. (A) One hour of class time per week throughout a semester.
In a university credit system, a single credit typically represents one hour of instruction or class time per week over a full semester. This standardized unit provides a consistent way to measure the academic workload of different courses, whether they are theoretical lectures or practical lab sessions. The number of credits assigned to a course reflects its depth and the amount of time students are expected to dedicate to it. This system facilitates academic tracking, graduation requirements, and the transfer of learning between different higher education institutions.

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110. (B) P-2, Q-1, R-4, S-3
Various government bodies and policies play specific roles in shaping the landscape of physical education and sports in India. The National Council for Teacher Education sets the standards for teacher training courses like the B.P.Ed. The University Grants Commission ensures quality within higher education departments. Initiatives like 'Khelo India' focus on promoting a grassroots sports culture. Additionally, the Sports Authority of India is responsible for nurturing national talent and managing elite training facilities. Together, these organizations provide a comprehensive framework for sports and education.

111. (B) The personal and arbitrary whims of the teacher.
The selection of subject matter for a physical education curriculum must be based on objective criteria to ensure its effectiveness. This includes considering the students' developmental levels, the goals of the curriculum, and the available facilities and time. A professional curriculum should never be based on the personal or arbitrary whims of an individual teacher. Such an approach would lead to an inconsistent and potentially ineffective program. Decisions about what to teach should always be driven by pedagogical principles and the educational needs of the students.

112. (A) The impact of technology in education.
Using interactive tools like smart-boards to explain complex concepts such as biomechanics is a direct example of technology's impact in physical education. This technology allows teachers to use visual aids, animations, and videos to clarify abstract ideas that might be difficult to understand through verbal instruction alone. By making learning more visual and interactive, technology can increase student engagement and improve their understanding of the scientific principles governing movement. This modern approach enhances the pedagogical effectiveness of the physical education teacher.

113. (C) Facilitation, regulation, and provision of infrastructure.
The public sector's role in promoting physical education is focused on creating the necessary environment for sports to thrive. This involves facilitating development through national policies, regulating professional standards through bodies like the NCTE, and providing the basic infrastructure needed for widespread participation. By building playgrounds and funding school programs, the government ensures that physical activity is accessible to all segments of society. This role is essential for maintaining national health standards and providing an equitable foundation for sports development across the country.

114. (A) The content, activities, games, and knowledge to be taught.
In the context of curriculum planning, 'subject matter' refers to the specific material that students are expected to learn. This includes the various physical skills, the rules and strategies of different games and sports, and the theoretical knowledge related to health and fitness. Selecting and classifying this subject matter is a core task for educators to ensure that the program is comprehensive and developmentally appropriate. It forms the actual content that students will interact with throughout their physical education classes and academic studies.

115. (A) Both A and R are true and R is the correct explanation of A.
Private sector involvement has become increasingly vital for the development of sports in India. Corporate entities bring in significant financial investment and professional management skills that can supplement government efforts. Their expertise in marketing and event organization helps to increase the visibility of various sports and attract more participants and fans. By establishing academies and sponsoring leagues, the private sector provides additional pathways for athlete development and helps to create a more diverse and commercially sustainable sports ecosystem for the nation.

116. (B) Patience, enthusiasm, and the ability to make activities fun.
Working with primary school children requires a specific set of personal qualities to be effective. A physical education professional at this level must be patient and enthusiastic to keep young students engaged and motivated. The ability to design and deliver activities that are fun

91. (B) Maintain standards of higher education, including physical education departments in universities.
The University Grants Commission is a key government agency responsible for maintaining the quality and standards of higher education in India. Its role extends to the physical education departments within universities, where it sets benchmarks for faculty recruitment, research, and infrastructure. The UGC provides funding and guidelines to ensure that these departments offer high-quality academic programs and contribute to the scientific advancement of the field. By monitoring these institutions, the UGC ensures that professional preparation in physical education meets rigorous national academic standards.

92. (A) Grouping activities and content based on specific criteria like type, difficulty, or objective.
Classifying subject matter is a fundamental part of curriculum planning that involves organizing activities into logical groups. This can be done based on the type of activity, the level of difficulty, or the specific educational objectives being targeted. Proper classification ensures that there is a clear and progressive flow to the learning process, helping students to build their skills systematically. This organized approach allows teachers to deliver a well-rounded and structured program that covers all essential areas of physical education in a coherent and effective way.

93. (D) Statement I is false, but Statement II is true.
The private sector plays an active and significant role in the promotion of sports and physical education in modern India. Many corporate entities and foundations invest in sports infrastructure, establish high-performance academies, and sponsor major events and individual athletes. This involvement is often driven by corporate social responsibility and commercial interests. By bringing in professional management and marketing expertise, the private sector supplements government efforts and provides additional pathways for talent development and sports promotion across the country, making Statement I false and Statement II true.

94. (A) Professional duties and obligations towards students, the institution, and the profession.
The responsibilities of physical education personnel encompass the range of professional duties and ethical obligations they have to their students, their schools, and their profession. This includes planning and delivering effective lessons, ensuring student safety, assessing progress, and acting as positive role models. Beyond the classroom, they are responsible for managing facilities and coordinating sports programs. These responsibilities are essential for maintaining the integrity and effectiveness of the physical education program and for fostering the overall development and well-being of the students they serve.

95. (A) I, II, and IV only
A well-rounded physical education curriculum for secondary students should provide a bridge from basic skills to more specialized sports participation. It should include instruction on game rules and strategies, as well as essential knowledge about health, fitness principles, and injury prevention. The program should offer a mix of competitive and recreational opportunities to cater to different student interests and abilities. This comprehensive approach ensures that students develop the skills and knowledge needed for lifelong physical activity, while also having the chance to excel in competitive sports.

96. (A) Decreased student engagement and higher dropout rates from activities.
A curriculum that fails to offer variety and ignores student interests is likely to be ineffective and unmotivating. When students find the activities repetitive or irrelevant to their lives, their engagement levels drop, leading to decreased participation and higher dropout rates. Physical education should be dynamic and offer a range of options that appeal to diverse learners. By providing a varied and student-centered program, educators can foster a positive relationship with physical activity and encourage more students to remain active and involved throughout their school years.

97. (A) Research methodology, sports management, and exercise prescription.
Subject matter at the higher education level is focused on advanced professional preparation

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123. (A) It should focus on inclusion and adaptation.
A curriculum for differently-abled pupils must prioritize the principles of inclusion and adaptation to be effective and safe. This involves modifying activities, rules, and equipment to ensure that every student can participate in a meaningful way, regardless of their specific challenges. The goal is to provide an equitable educational experience that allows all students to develop their physical abilities and social skills. By focusing on adaptation, educators create a supportive and accessible environment where all pupils can experience the benefits of physical education alongside their peers.

124. (B) Greater professionalization and academic recognition of the field.
The evolution of teacher education for physical education in India reflects a significant move toward professionalization and academic recognition. The discipline has transitioned from rudimentary training to a rigorous academic field with its own set of professional standards, research initiatives, and higher degree programs. This growth has elevated the status of physical educators and ensured that they are seen as specialized professionals with deep expertise in sports science and pedagogy. This shift is essential for maintaining high educational standards and promoting physical education as a vital academic discipline.

125. (B) III, IV, and V ONLY
Effective curriculum planning and design require a flexible and responsive approach that prioritizes student needs and logical organization. A good curriculum should have a clear sequence of learning and be adaptable to new information. Conversely, making a curriculum rigid, ignoring community values, and viewing evaluation as unnecessary are practices that hinder educational success. A successful program must be dynamic, community-relevant, and constantly evaluated to ensure it continues to meet its goals and provide the best possible learning experiences for all participating students.

126. (A) Teaching the importance of nutrition, hygiene, and disease prevention through an active lifestyle.
Physical education professionals have a primary responsibility for student health that involves education and promotion. They teach students about the vital link between an active lifestyle and the prevention of chronic diseases. This includes instruction on proper nutrition, hygiene, and the importance of regular physical activity. By providing students with this knowledge, educators empower them to make healthy choices that will benefit them throughout their lives. Their role is to facilitate wellness through education and by serving as positive role models for a healthy, active lifestyle.

127. (D) Higher education (university) level.
Advanced academic qualifications like an M.Phil. or Ph.D. are most relevant and typically required for positions within higher education. At the university level, faculty members are expected to not only teach but also engage in high-level scientific research and provide doctoral supervision. These qualifications ensure that individuals have the deep expertise and research skills needed to contribute to the academic development of physical education. They are essential for leadership roles in departments where research and the training of future professionals are the primary focus.

128. (A) Both Statement I and Statement II are true.
The organizational structure of physical education at the university level is naturally more complex than in a school setting. Universities must manage diverse academic departments, large-scale facilities, and various inter-collegiate sports programs. This requires a more detailed hierarchy with specialized roles for administration, research, and coaching. This structured approach is essential for coordinating the many different facets of higher education and professional sport, ensuring that all programs are managed effectively and meet the high academic and athletic standards of the institution.

129. (B) To ensure systematic and organized instruction.
A time-table is an essential teaching aid that ensures the physical education program is delivered in a systematic and organized way. By allocating specific times for different classes and activities, it prevents confusion and ensures that all parts of the curriculum are covered. This structured approach helps both teachers and students manage their time effectively and

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142. (A) To use video analysis software to record, playback, and slow down the shooting action for feedback.
Using video analysis software is one of the most effective ways to apply technology for skill improvement in physical education. By recording and playing back movements in slow motion, coaches can provide students with highly specific and visual feedback. This allows athletes to see exactly where they need to make technical adjustments, leading to faster skill acquisition and more effective technique refinement. This technological application provides an objective basis for coaching and helps students understand the biomechanical principles of their sport more clearly and precisely.

143. (A) Student-centric
A fundamental concept of modern curriculum planning is that it must be student-centric. This means the program should be designed around the needs, interests, and developmental stages of the learners. By prioritizing the student, educators can create more engaging and effective learning experiences that resonate with the pupils. This approach encourages active participation and helps to build a positive relationship with physical activity. A student-centric curriculum is more likely to achieve its goals and support the overall physical and personal development of every learner in the program.

144. (A) Ensuring the safety of the participants.
Ensuring the physical and emotional safety of participants is the most critical responsibility for any physical education professional. At every level of education, teachers must create a secure environment by managing equipment, supervising activities properly, and applying safety rules consistently. This commitment to safety protects students from injury and builds the trust needed for them to take part in physical challenges and develop new skills. Safety is the foundation upon which all other educational and athletic goals are built within the physical education program.

145. (B) I, II, and III only
Physical education curriculum content must be tailored to the specific developmental level of the students at different educational stages. Primary content should focus on fundamental movements, while the secondary level introduces more complex game tactics and strategies. Higher education content shifts toward advanced sports sciences and research methodology. It is incorrect to suggest that content should be identical across all levels, as students' physical, cognitive, and professional needs change significantly as they mature and move through the different stages of their education.

146. (A) The role of the National Curriculum and Ofsted inspections.
A comparative study of the United Kingdom would highlight the significant influence of its National Curriculum and the role of Ofsted in maintaining standards. These frameworks ensure that physical education is delivered consistently across schools and that educational quality is monitored through regular inspections. This structured approach emphasizes academic accountability and provides a clear guide for teacher training and curriculum content. Understanding this system provides valuable insights into how centralized national standards can be used to ensure high-quality physical education for all students across a diverse school system.

147. (A) The needs, interests, and developmental stages of the student.
A learner-centered curriculum design focuses primarily on the individual needs and developmental stages of the students. This approach ensures that the educational experience is relevant and engaging, as it takes into account what students are interested in and what they are physically and cognitively capable of achieving. By placing the student at the center of the design process, educators can create a more inclusive and effective program that fosters a lifelong love for physical activity and supports the comprehensive development of every pupil.

148. (D) Statement I is false, but Statement II is true.
The role of a physical education teacher in promoting wellness is comprehensive and extends well beyond the physical dimension. Wellness is a multidimensional concept that includes emotional, social, and intellectual health, all of which can be positively influenced through well-planned physical education experiences. Educators contribute to overall

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136. (A) The National Council for Teacher Education (NCTE)
The National Council for Teacher Education is the official government body in India responsible for granting recognition to teacher education institutions. This includes institutions offering professional physical education degrees like the B.P.Ed. and M.P.Ed. The NCTE sets the mandatory standards for faculty, infrastructure, and curriculum to ensure the quality of teacher training across the country. By regulating these institutions, the NCTE ensures that future physical education teachers are prepared to meet the professional demands of the field and provide high-quality instruction to their students.

137. (C) Their scope is strictly limited to refereeing matches.
The scope of physical education personnel is broad and encompasses many different roles and responsibilities. They are involved in promoting health and fitness, teaching sports skills, and organizing complex events. Their influence extends to student wellness and administrative management within the department. While refereeing may be part of their activities, it is incorrect to suggest their scope is strictly limited to this single task. Modern physical education professionals are multi-skilled educators who contribute to the physical, social, and academic development of their students in many meaningful ways.

138. (A) Thoughtfully designing integrated programs with modifications where biologically or socially appropriate.
Handling the classification of subject matter with reference to sex requires a balanced and sensitive approach. Modern curricula should promote integration and equity while also acknowledging and respecting physiological differences when they are relevant for safety or performance. This involves thoughtfully designing programs that allow for co-educational participation with appropriate modifications. The goal is to ensure that all students, regardless of gender, have a positive and inclusive experience that allows them to develop their physical abilities and social skills together in a respectful environment.

139. (A) Integrating physical education into the mainstream curriculum as a graded subject.
Recent government policies in India aim to elevate the status of physical education by integrating it into the mainstream academic curriculum. This involves making physical education a graded subject, which ensures it receives the same attention and importance as traditional academic areas. This policy shift recognizes the vital role of physical activity in overall student development and public health. By making physical education an essential and assessed part of the school experience, these policies encourage more consistent participation and a more holistic approach to student learning.

140. (C) A is true but R is false.
A well-structured organizational hierarchy is absolutely essential for the effective management of a university's physical education department. It provides the clear lines of authority and responsibility needed to coordinate complex activities and large facilities. Contrary to the idea that it only creates bureaucracy, a good hierarchy actually improves efficiency by defining roles and streamlining communication. It ensures that the department can successfully manage its academic, athletic, and administrative duties while providing a professional and organized environment for both students and faculty members.

141. (A) An increase in the academic and professional status of the discipline.
The development of physical education teacher training in India, moving from simple certificate courses to advanced degree and research programs, marks a significant increase in the field's professional status. This academic progression ensures that teachers are equipped with a sophisticated understanding of sports science and modern pedagogical theories. It elevates the discipline from a focus on basic physical drills to a recognized academic field that contributes to national health and athletic achievement. This professionalization is essential for maintaining high educational standards and professional accountability.

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allows for the optimal use of shared facilities and equipment. A well-designed schedule is fundamental for creating a professional and efficient learning environment that supports student achievement.

130. (A) Selecting subject matter according to age and ability.
Modifying a game for younger children by using softer balls and lower nets is an application of the principle of selecting subject matter based on age and ability. This approach ensures that the activity is developmentally appropriate and allows all children to experience success. By adjusting the challenge level, the teacher makes the game more engaging and safe, fostering a positive relationship with physical activity. This principle is key to effective teaching, as it respects the unique needs and developmental stages of all learners in the class.

131. (B) A corporate group establishing a "Center of Excellence" for badminton training.
The establishment of specialized training centers by corporate groups is a prime example of the private sector's role in promoting sports. These facilities often provide elite-level coaching and high-quality infrastructure that may not be available through the public system. By investing in talent development, the private sector contributes to the overall success of the nation in international competitions. This involvement demonstrates how commercial interests and corporate social responsibility can lead to significant advancements in the sports landscape and provide more opportunities for dedicated athletes.

132. (A) Quality control and improvement.
Curriculum appraisal is essentially a process of quality control designed to ensure that the educational program remains effective and high-quality. By systematically evaluating the curriculum's impact, educators can identify areas where the program is succeeding and where it needs adjustment. This process provide the objective evidence necessary for making informed decisions about program improvement. Appraisal ensures that the curriculum stays relevant and continues to meet the needs of the students, leading to a more effective and accountable physical education program that evolves over time.

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133. (C) B.Tech. (Bachelor of Technology) in Computer Science
Professional courses in physical education are specifically designed to train educators, coaches, and administrators in the sports field. In India, programs like B.P.Ed., M.P.Ed., and C.P.Ed. are the recognized professional pathways for this discipline. These courses focus on sports science, pedagogy, and physical skills. In contrast, a B.Tech. in Computer Science is a specialized engineering degree that is unrelated to the professional preparation for physical education. Choosing the correct academic pathway is essential for anyone seeking a recognized career in the field of sport and education.

134. (A) Co-education and inclusion
Integrated physical education programs for boys and girls are built on the foundational principles of co-education and inclusion. These programs aim to provide equitable opportunities for all students to participate and learn together, regardless of gender. By working in mixed groups, students develop mutual respect and essential social skills like communication and cooperation. This inclusive approach reflects modern pedagogical values that emphasize equality and social development, preparing students for life in a diverse society where the ability to work together is a key skill for success.

135. (B) P-4, Q-1, R-2, S-3
The focus of a physical education curriculum must change to remain developmentally appropriate across different educational stages. At the pre-school level, the emphasis is on unstructured play and basic patterns. Primary education focuses on fundamental motor skills and fun games. Secondary schools introduce more specific team sports and fitness concepts as students mature. Finally, higher education shifts toward advanced specialization, research, and professional preparation. This progression ensures that the curriculum meets the physical, cognitive, and academic needs of students as they grow and prepare for their future careers.

wellness by teaching teamwork, stress management, and the importance of a balanced lifestyle. Therefore, suggesting that their role is limited only to physical health is false, as modern physical education aims to support the holistic development of every student.

149. (A) Appropriate, progressive, and effective.
The selection and classification of subject matter are crucial for ensuring that the physical education program is appropriate for the students' developmental levels. This organized approach allows for a logical and progressive flow of learning, where students build upon their skills in a systematic way. By carefully choosing what to teach, educators can ensure that the curriculum is effective in achieving its intended goals. This structured planning is essential for delivering a high-quality education that meets the needs of all learners and promotes athletic and personal growth.

150. (A) I, II, III, and IV only
Physical education teachers in a school setting have a wide range of professional responsibilities. They must plan and deliver effective lessons, assess student progress, manage shared equipment and facilities, and work collaboratively with parents and other staff members. These duties are essential for the smooth operation of the program and the overall development of the students. While they provide basic first aid, they are not qualified to diagnose or treat complex medical conditions, which remains the responsibility of trained medical professionals outside of the school environment.

151. (A) Make decisions about the curriculum.
The primary purpose of curriculum evaluation is to gather objective information that can be used to make informed decisions about the program. By analyzing data on student achievement and program effectiveness, educators can decide whether to continue, modify, or replace specific parts of the curriculum. This process ensures that the program remains evidence-based and responsive to the needs of the students. Evaluation provides the necessary foundation for continuous improvement, ensuring that the physical education curriculum remains a high-quality and effective tool for student development.

152. (A) It has shown a trend of increasing academic rigor and specialization over time.
The historical development of physical education teacher training in India has been marked by a clear trend toward increasing academic rigor and specialization. Starting with basic certificates, the field has evolved into a sophisticated discipline that offers university degrees at the undergraduate, postgraduate, and doctoral levels. This progression reflects a move away from simple physical training toward a scientific and pedagogical approach to the subject. This increasing specialization ensures that teachers are well-prepared to meet the complex demands of modern education and contribute to the field's advancement.

153. (A) Clear lines of authority and efficient management.
A well-structured hierarchy in a college's physical education department is vital for ensuring clear lines of authority and efficient management. By defining specific roles, such as the Director, Head of Department, and faculty members, the organization ensures that responsibilities are assigned effectively and everyone knows their duties. This structured approach facilitates smoother communication and coordinates the management of facilities and events. A clear hierarchy prevents confusion and allows the department to function professionally, providing a better environment for both teaching and sports participation for all students.

154. (A) Secondary school.
A Bachelor of Physical Education is a specialized professional degree required for teachers seeking to work at the secondary school level in India. This qualification provides the comprehensive training in sports science and pedagogy needed to instruct adolescents in complex game strategies and fitness principles. By requiring a B.P.Ed., the education system ensures that teachers have met specific professional standards and are equipped to manage the physical and educational development of older students. This degree is a foundational requirement for a recognized career in school-level physical education.

155. (B) III, II, IV, I
The governance of physical education in India follows a top-down hierarchy that begins with

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national policy-making. At the highest level is the Ministry of Youth Affairs and Sports, which sets broad goals and policies. Universities, managed by Directors of Physical Education, then implement these programs at the higher education level. Within these institutions, individual colleges have their own Heads of Department. Finally, Physical Education Teachers at the school level deliver the curriculum directly to students. This structure ensures that national policies are translated into practical educational programs at every level.

156. (A) Relating the concepts of physical education to other subjects and life experiences.
An integrated approach in curriculum design involves making meaningful connections between physical education and other academic subjects or real-life experiences. For example, a teacher might relate the physics of movement to a science lesson or the history of sports to a social studies class. This approach helps students see the relevance of physical education in a broader context and reinforces learning across different disciplines. By integrating these concepts, educators create a more holistic and engaging educational experience that supports a deeper understanding of the world for the students.

157. (A) Sports-playing and participation culture.
Modern government policies in India are focused on transforming the national sports culture from one of passive viewing to active participation. The goal is to encourage all citizens, especially students, to engage regularly in physical activity and sports. By promoting a participation culture, these policies aim to improve public health, develop new talent, and foster a lifelong habit of fitness. This shift recognizes that active participation is essential for the comprehensive development of individuals and the creation of a healthy, active nation that values and practices sports at every level.

158. (A) Professional league management and athlete sponsorship.
The private sector makes its most significant contribution to sports promotion through the professional management of leagues and athlete sponsorship. By providing the financial backing and marketing expertise needed for major sports events, corporate entities increase the visibility and commercial success of various athletic disciplines. Sponsorship provides individual athletes with the resources they need to train and compete at the highest levels. This professional involvement drives growth in the sports industry, creates career opportunities, and inspires the next generation of athletes through high-profile role models and competitions.

159. (A) Making a value judgment based on the evidence collected.
Appraisal is a critical final step in the curriculum evaluation process where educators make informed value judgments about the program. This involves analyzing the evidence collected through various assessments to determine the curriculum's overall merit and effectiveness. The appraisal provides a clear conclusion about whether the program is achieving its goals and whether it should be continued, modified, or improved. This thoughtful judgment is essential for ensuring educational quality and providing the objective basis needed for strategic changes that benefit the students and the institution as a whole.

160. (A) P-3, Q-1, R-4, S-2
Different elements of a physical education curriculum are illustrated by specific examples that highlight their functions. Subject matter for primary students often includes fun equipment like hoops and bean bags to develop basic skills. For higher education, the subject matter focuses on advanced scientific topics like biomechanics. Teaching aids can include modern technology like video projectors to enhance instruction. Finally, evaluation procedures use tools like stopwatches and measuring tapes to conduct fitness tests and gather data on student performance, ensuring that learning objectives are being successfully met.

161. (A) Developmental psychology
Applying principles of developmental psychology is essential when selecting and classifying curriculum subject matter according to age. This field of study provides insights into how children's physical, cognitive, and emotional abilities change as they mature. By understanding these developmental stages, educators can design activities that are appropriate, safe, and challenging for each age

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group. This psychological foundation ensures that the curriculum is aligned with the student's natural growth patterns, leading to more effective learning and a more positive experience with physical activity and sports throughout their school years.

162. (A) Both statement i and statement ii are true, and statement ii is a correct example for statement i.
Technology has the potential to significantly enhance student engagement and learning in physical education. A prime example of this is exergaming, which combines active video games with physical exercise. This innovative approach can motivate students who may be reluctant to participate in traditional sports by making activity more interactive and fun. By providing alternative ways to be active, technology helps create a more inclusive environment that caters to different student interests. This demonstrates how technological tools can be used to achieve core physical education goals in creative and engaging ways.

163. (A) Facilitator and educator.
The role of a physical education teacher in promoting wellness is best characterized as that of a facilitator and educator. Their primary mission is to provide students with the knowledge, skills, and motivation needed to lead a healthy and active lifestyle. They facilitate learning through activities and serve as educators by teaching the benefits of fitness and nutrition. This positive and supportive role empowers students to take ownership of their own health. By acting as a guide and role model, the teacher helps students develop long-term habits that support holistic well-being.

164. (A) The national council for teacher education (ncte).
In India, the National Council for Teacher Education is the primary government agency responsible for monitoring the quality and standards of professional teacher training programs. This includes monitoring physical education degrees like the B.P.Ed. and M.P.Ed. to ensure they meet mandatory requirements for faculty, facilities, and curriculum. By overseeing these programs, the NCTE ensures that the training provided is consistent and of high quality across all recognized institutions. This regulation is vital for maintaining the professionalism of the field and ensuring that future teachers are adequately prepared for their careers.

165. (A) Both a and r are true and r is the correct explanation of a.
Involving various stakeholders in curriculum planning is a democratic process that enhances the quality of physical education. By including teachers, students, and community members, educators can ensure that the curriculum is relevant to the local context and addresses the actual needs and interests of the learners. This collaborative approach leads to a more effective and widely accepted program, as it reflects a broad range of perspectives and expertise. When stakeholders have a voice in the planning process, they are more likely to support and successfully implement the resulting curriculum.

166. (A) The legacy of the soviet system of 'sports schools' and talent identification.
A comparative study focusing on Russia would inevitably explore the historical impact of the Soviet-era sports schools. This highly structured system was designed to identify athletic talent at a very young age and provide intensive, state-sponsored training. The legacy of this approach continues to influence modern Russian sports, emphasizing a centralized and scientific model for developing elite athletes. Understanding this system provides valuable insights into how a nation can organize its resources to achieve international success and the impact of state-level talent identification programs on professional sport development.

167. (A) Designing and implementing programs to improve students' strength, endurance, and flexibility.
Promoting student fitness is a core responsibility that involves a proactive approach to health. Physical education professionals must design and implement structured programs that target the essential components of fitness, such as muscular strength, cardiovascular endurance, and flexibility. By providing a variety of activities and teaching proper exercise principles, they help students build a strong physical foundation. This responsibility also includes assessing fitness levels and providing feedback to help students make progress. This focus on individual

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192. (A) Public sector is policy-oriented; private sector is often profit or csr-oriented.
The public and private sectors have distinct primary focuses in their promotion of sports and physical education. The public sector is largely policy-oriented, focusing on governance, regulation, and ensuring widespread access through public services and funding. In contrast, the private sector is often driven by commercial interests, profit, or corporate social responsibility goals. While their motivations differ, both sectors contribute to the sports landscape in complementary ways. Understanding these different roles is key to understanding how a national sports ecosystem develops and the different pathways available for sports participation and professional athlete development.

193. (A) The fundamental ideas and theories that underpin the creation of a curriculum.
Curriculum concepts refer to the core ideas and theoretical principles that guide the development and organization of an educational program. These concepts include ideas like child-centeredness, sequential progression, and the integration of different subjects. They provide the necessary framework for deciding what content to teach and how it should be delivered and assessed. By understanding these fundamental concepts, educators can design more effective and meaningful curricula that are grounded in pedagogical research and designed to achieve specific physical, social, and academic goals for all of their participating students.

194. (A) Survey the students to understand their interests and review the curriculum content.
When a physical education teacher identifies a decline in student participation, the most competent and professional first step is to investigate the cause. This involves surveying the students to understand their specific interests and needs and then reviewing the current curriculum content for its relevance and engagement. By gathering this data, the teacher can identify areas where the program may be failing to connect with the students and make informed adjustments. This student-centered approach is essential for revitalizing the program and ensuring that it remains effective and engaging for all participating pupils.

195. (A) I AND III ONLY
Effective curriculum planning in physical education is based on principles that ensure the program is both successful and student-centered. A core principle is that the curriculum should be child-centric, focusing on the needs and interests of the learners. Additionally, it must have clear, measurable objectives to guide instruction and assess progress. Conversely, making a curriculum rigid or disconnected from the community is contrary to good planning practices. A flexible, purposeful, and student-focused approach is essential for creating a dynamic and meaningful educational experience that supports the comprehensive development of every student in the program.

196. (A) Provide a structured plan for the allocation of time and resources for pe classes.
A time-table serves as an essential administrative and pedagogical tool in physical education by providing a structured plan for the organized use of time and resources. It ensures that specific periods are allocated for different classes and activities, which prevents scheduling conflicts and allows for the optimal use of playgrounds and equipment. This structured approach helps both teachers and students stay organized and ensures that the entire physical education curriculum is delivered systematically. A well-designed schedule is fundamental for creating an efficient and professional learning environment that supports overall student achievement.

197. (A) Guiding postgraduate research and teaching specialized subjects like exercise physiology.
Professionals at the university level have advanced responsibilities that focus on higher education and specialized academic study. A key part of their role is teaching complex subjects like exercise physiology and providing guidance to postgraduate students conducting original research. These duties require a deep expertise in sports science and research methodology. By performing these tasks, university faculty members contribute to the scientific advancement of the field and the training of the next generation of physical education experts. This academic leadership is essential for maintaining the rigor

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This professionalization was essential for transforming the field into a respected academic discipline that promotes comprehensive student health and athletic development.

174. (A) Build upon fundamental skills and introduce more complex game strategies and fitness concepts.
The curriculum for secondary level physical education is designed to bridge the gap between basic movements and advanced athletic performance. It focuses on building upon the fundamental skills learned in primary school and introducing students to more complex game strategies and theoretical fitness concepts. At this stage, students are physically and cognitively ready for a deeper understanding of various sports and the scientific principles of health. This progression ensures that the curriculum remains developmentally appropriate and prepares students for more specialized sports participation and a lifetime of informed fitness habits.

175. (A) I, II, and III ONLY
The promotion of physical education and sports involves important and complementary roles for both the public and private sectors. The government is responsible for creating the national policies and regulations that provide a foundation for development. The private sector contributes through professional management and financial investment, often in high-performance sports. Both sectors can successfully collaborate to build necessary infrastructure and increase sports participation. While their motivations may differ, their combined efforts are essential for creating a robust and diverse sports ecosystem that offers a wide range of opportunities for athletes and the general public.

176. (A) Any tool or device used by the teacher to make learning more effective and engaging.
A teaching aid is any instructional tool used by an educator to enhance the learning experience and clarify complex concepts for students. In physical education, this can include physical tools like cones, markers, and stopwatches, as well as digital resources like video analysis software and anatomical charts. These aids help make instruction more interactive and visually engaging, which can improve student understanding and retention of both skills and theoretical knowledge. The effective use of teaching aids is a hallmark of high-quality pedagogy and helps students achieve their learning objectives more efficiently.

177. (A) Curriculum for differently-abled pupils.
Creating inclusive activities that allow students with physical challenges to participate alongside their peers is a core principle of adapting the curriculum for differently-abled pupils. This approach requires teachers to use modifications and adaptations that ensure every student can be included in a meaningful way. By focusing on what students can do rather than their limitations, educators foster a supportive environment that values diversity and promotes social development. This inclusive practice ensures that physical education remains accessible and beneficial for all students, regardless of their individual physical or cognitive abilities.

178. (A) Assess the worth of the curriculum and guide future improvements.
Curriculum appraisal is a systematic process of evaluation aimed at determining the overall value and effectiveness of an educational program. By appraising the curriculum, educators can identify areas of success and those that require refinement to better meet student needs. This objective assessment provides the necessary evidence for making strategic changes and ensures that the curriculum remains high-quality and effective. Appraisal is a vital tool for academic accountability and for ensuring that the physical education program continues to evolve and support the physical and developmental goals of all participating students.

179. (A) A Bachelor of physical education (b.P.Ed.) Degree.
The Bachelor of Physical Education is the standard professional qualification required for teachers at the secondary level in India. This degree program provides the comprehensive training in sports science, pedagogy, and athletic disciplines needed to effectively manage older students. By requiring a B.P.Ed., the education system ensures that teachers have the professional knowledge and skills to deliver a high-quality physical education that meets national standards. This foundational degree is essential for ensuring that students receive evidence-based instruction

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and that the physical education program is led by qualified and competent professionals.

180. (A) Ensuring a logical and sequential progression of learning.
Classifying curriculum subject matter is a fundamental task that ensures students experience a logical and sequential flow of learning throughout their education. By organizing content based on criteria like difficulty or type, educators can build a program where students systematically develop their skills and knowledge over time. This organized approach prevents a fragmented educational experience and ensures that all activities contribute meaningfully to the students' overall development. Proper classification provides the structure needed for a comprehensive and effective curriculum that supports student success at every stage of their physical and academic journey.

181. (A) Diversity, with strong state-level control and influence of organizations like shape america.
Professional preparation in the United States is notable for its diversity and the significant role of state-level control over educational standards. While national organizations like SHAPE America provide important guidelines and frameworks, each state has the authority to set its own specific requirements for teacher certification and curriculum. This decentralized approach allows for a wide range of academic programs and reflects the country's diverse educational landscape. A comparative study would highlight this flexibility and the important influence of professional organizations in promoting high standards for physical education and teacher training across the various states.

182. (A) Both statement i and statement ii are true.
The role of the private sector in promoting sports in India has seen significant growth in recent years. This expansion is clearly evident in the rise of professionally-owned sports leagues, specialized academies, and increased corporate sponsorships for athletes and events. This private investment has brought new levels of professionalism and financial stability to various sports. By supplementing government efforts, the private sector has expanded the range of opportunities for talent development and sports participation across the nation, making it a critical partner in the development and promotion of a vibrant national sports culture.

183. (A) Prescribing antibiotics for student illnesses.
Physical education teachers have many professional responsibilities, including planning effective lessons, assessing student progress, and maintaining a safe learning environment. These duties are essential for the delivery of a high-quality program and the overall well-being of the students. However, prescribing medication like antibiotics is a clinical task that falls entirely within the domain of trained medical professionals. Physical education personnel are not qualified or legally authorized to provide medical diagnoses or prescriptions. Their role in health is focused on education, promotion, and providing basic first aid in emergencies within the school setting.

184. (A) Health, fitness, and wellness promotion.
The scope of physical education personnel has evolved significantly from a historical focus on simple drill and physical training. Today, their role is much broader and more sophisticated, encompassing the comprehensive promotion of health, fitness, and overall wellness. They are expected to educate students about the benefits of an active lifestyle, proper nutrition, and mental well-being. This expanded scope recognizes the vital role that physical education plays in the holistic development of students and its importance for long-term public health and the creation of a physically active and healthy society.

185. (B) P-3, Q-1, R-2, S-4
Understanding key curriculum terms is essential for the organized delivery and evaluation of physical education. Curriculum planning is the systematic process of designing effective educational experiences. Subject matter refers to the specific content, skills, and knowledge that form the core of the program. Integrated programs provide co-educational activities that promote social development and mutual respect between boys and girls. Finally, curriculum appraisal serves as a vital procedure for judging the overall merit and effectiveness of the curriculum, ensuring that the program continues to meet its goals and student needs.

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186. (A) Create leaders, administrators, and researchers in the field of physical education.
The introduction of advanced professional courses like the Master of Physical Education in India was a strategic move to develop higher-level expertise in the field. These programs are designed to create the leaders, administrators, and researchers needed to manage the sports ecosystem and advance the scientific study of the discipline. By providing advanced training in management and research, the M.P.Ed. ensures that the profession has qualified individuals who can drive innovation and maintain high standards in higher education and sports governance. This specialized training is essential for the continuous development of physical education.

187. (A) It has greatly facilitated access to scientific literature and research.
The impact of technology, particularly the development of online databases and scholarly journals, has transformed the landscape of higher education in physical education. It has provided students and faculty with unprecedented access to global scientific literature and the latest research findings in various sports-related fields. This immediate access to information has greatly facilitated research and helped to ensure that the curriculum and coaching methods are based on the best available evidence. Technology has thus become a vital tool for academic advancement and the continuous scientific improvement of the discipline at the university level.

188. (A) The khelo india scheme
The 'Khelo India' scheme is a prominent and recent government initiative designed to promote sports and physical education at the grassroots level throughout the country. It focuses on identifying young talent, building modern sports infrastructure, and creating a strong sports culture through national competitions. By providing financial support and specialized training to promising athletes, the program aims to establish a sustainable pipeline for national and international success. This initiative reflects the government's commitment to making sports a more integral part of the nation's educational and social fabric for its future growth.

189. (A) Classification of subject matter by age.
Designing different curricula for students based on their developmental stages is a clear application of the principle of classifying subject matter by age. For younger children, the focus is on fundamental movements like hopping and skipping to build coordination. As students grow, the curriculum shifts toward more complex team sports like basketball and soccer. This progression ensures that activities are developmentally appropriate, safe, and challenging enough to keep students engaged. By matching the content to the students' physical and cognitive maturity, educators ensure a more effective and supportive learning experience for everyone.

190. (A) Both a and r are true and r is the correct explanation of a.
Adapting curriculum content for differently-abled pupils is a fundamental professional responsibility for all physical education teachers. This commitment to inclusion is based on the principle that every student deserves the opportunity to participate and learn in the least restrictive environment possible. By modifying activities and equipment, teachers ensure that students with physical or cognitive challenges can engage meaningfully in physical education. This approach not only supports the development of the individual student but also fosters a more inclusive and empathetic school environment where diversity is valued and every student can succeed together.

191. (A) Other subject teachers and school administration.
In the school hierarchy, the Physical Education Teacher must work in close coordination with other subject teachers and the school administration to ensure the program's success. This collaboration is essential for managing class schedules, coordinating school events like sports days, and supporting the overall development and well-being of the students. By working as part of an integrated academic team, the PET ensures that physical education is seen as a vital part of the total educational experience. This cooperative approach helps to build a more supportive and organized school community for both students and staff members.

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meeting the physical and academic needs of all participating students.

204. (A) The impact of technology on the subject.
The growing use of specialized fitness apps and wearable technology in physical education is a clear demonstration of technology's impact on the field. These tools provide objective, real-time data on students' activity levels and heart rate, making fitness concepts more tangible and measurable. By using this information for feedback and assessment, teachers can personalize instruction and motivate students more effectively. This technological integration enhances the educational experience and helps students take more ownership of their personal health and fitness. It reflects the broader move toward a more scientific and data-driven approach to physical education and athlete development.

205. (B) III, I, II
The subject matter in physical education increases in complexity as students move through the different levels of education. It begins at the primary level with a focus on fundamental movements and basic patterns through play. Secondary education introduces more complex game tactics, strategies, and official rules. Finally, higher education shifts toward advanced sports sciences, research methodology, and professional specialization. This ascending order of complexity ensures that the curriculum remains developmentally appropriate and provides a bridge from early movement exploration to professional expertise and scientific study, supporting the logical physical and cognitive growth of the students.

206. (A) The national curriculum for physical education.
A comparative study would highlight that the United Kingdom's system is strongly defined by its National Curriculum. This standardized framework ensures that a high-quality physical education is delivered consistently across all schools in the country. The curriculum specifies what students should learn at each stage and is supported by a rigorous inspection system to maintain high standards. Understanding this model provides valuable insights into how national standards can be used to ensure accountability and educational equity. It contrasts with more decentralized systems and demonstrates the impact of formal national policies on professional teacher training and curriculum content.

207. (A) Safety, adaptability, and inclusion.
When selecting subject matter for a physical education curriculum for differently-abled students, safety, adaptability, and inclusion must be the top priorities. The program should be designed with the specific needs of each student in mind, using modifications to activities and equipment to ensure participation is safe and effective. Inclusion means ensuring that these students are integrated into the program in a way that allows them to experience the benefits of physical activity alongside their peers. By prioritizing these three pillars, educators create a supportive and accessible environment where every pupil, regardless of their individual challenges, can achieve personal success and growth.

208. (A) The ability to create a positive, safe, and motivating learning environment.
The most important quality of any physical education professional is the ability to create a learning environment that is positive, safe, and motivating for all students. A successful teacher ensures that students feel secure and encouraged to take on new physical challenges and develop their skills. This requires excellent communication, effective group management, and a genuine interest in student well-being. By fostering a supportive atmosphere, the teacher can inspire students to enjoy physical activity and build the confidence needed for lifelong health. This foundational quality is essential for achieving all other educational and athletic goals within the physical education program.

209. (A) Director of sports, head of department, professor, coach.
The organizational hierarchy at the university level includes several specialized roles to manage the complex needs of higher education and sport. It typically includes a Director of Sports or a Head of Department who provide administrative and academic leadership. Professors, associate professors, and assistant professors are responsible for teaching and research within the department. Additionally, specialized coaches provide expert

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and evidence-based nature of the discipline in higher education.

198. (D) Statement i is false, but statement ii is true.
The credit system used in professional physical education courses is far from arbitrary; it is a standardized academic method with a very logical basis. Its primary purpose is to quantify the total workload of a course based on the number of hours of instruction, including lectures, tutorials, and practical sessions. This system provides a consistent measure that allows for the comparison of different educational programs and facilitates the transfer of academic records between institutions. Therefore, suggesting it has no logical basis is false, as the credit system is a vital tool for ensuring academic accountability and uniformity across higher education.

199. (A) Activities that encourage cooperation and mutual respect.
When planning an integrated physical education program for boys and girls, a teacher must prioritize activities that promote positive social development and mutual respect. The goal of integration is to provide an inclusive environment where students can learn and compete together regardless of gender. This requires selecting and modifying activities to ensure that everyone can participate safely and effectively. By focusing on cooperation and teamwork, the program helps students develop essential social skills and dismantle gender stereotypes. This inclusive approach prepares students for life in a diverse society where the ability to work together is highly valued.

200. (B) I, II, III, and IV ONLY
A comprehensive and effective physical education curriculum design must include several essential components. It starts with clearly stated objectives that define what students are expected to learn. The design must also include appropriate content and activities that are sequenced in a logical and structural way to ensure progress. Finally, there must be a clear plan for evaluating student learning and program effectiveness. These elements work together to create a professional and high-quality educational framework. In contrast, any rule against play or fun would be detrimental, as active engagement and enjoyment are vital for successful learning in physical education.

201. (A) The range of their influence and activities in educating for and encouraging healthy lifestyles.
The scope of physical education personnel in health promotion refers to the wide range of activities they undertake to educate and encourage students to lead healthy lives. This includes teaching the benefits of regular exercise, proper nutrition, and hygiene. Their influence extends beyond the playground, as they act as health advocates within the school and the wider community. By provided students with the knowledge and motivation to lead an active lifestyle, these professionals play a vital role in preventing chronic diseases and promoting lifelong wellness. This expanded scope is central to modern physical education's mission and its contribution to public health.

202. (A) Diploma in physical education (d.P.Ed.).
In the Indian professional context, a Diploma in Physical Education is a recognized foundational qualification for teachers seeking to work at the primary school level. This program provides essential training in movement exploration, children's games, and basic pedagogical techniques. It equips individuals with the specific skills needed to manage young children safely and introduce them to the basic concepts of physical activity in a developmentally appropriate way. Obtaining a D.P.Ed. ensures that primary school teachers have met professional standards and are qualified to build the physical foundation for the children they serve.

203. (A) Systematic, objective, and continuous.
To be effective, the procedure of curriculum evaluation must be systematic, objective, and continuous. It should follow a logical plan, use reliable data collection tools, and be ongoing throughout the educational cycle. This consistent approach ensures that the program is constantly being assessed for its value and impact, providing the feedback necessary for continuous improvement. Haphazard or occasional evaluation fails to provide the reliable evidence needed to make informed decisions. A professional and ongoing evaluation process ensures that the physical education curriculum remains relevant, high-quality, and focused on

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improvement ensures that every student has the opportunity to develop and maintain their own physical health.

168. (A) To foster a healthy, respectful, and cooperative co-educational environment.
The primary purpose of an integrated physical education program for boys and girls is to create a supportive and inclusive learning environment. These programs focus on fostering mutual respect and cooperation through shared physical activities. By learning and competing together, students develop essential social skills and an appreciation for gender equality. This co-educational approach prepares students for real-world social and professional interactions where cooperation between genders is a standard requirement. The focus is on creating a positive atmosphere where everyone feels valued and encouraged to participate and grow together as a team.

169. (C) The organizational set-up has no impact on curriculum implementation.
A well-structured organizational set-up is essential for the effective delivery of the physical education curriculum. It is incorrect to suggest that the organization has no impact on curriculum implementation. On the contrary, a clear hierarchy and defined roles are vital for coordinating activities, managing resources, and ensuring accountability. The organizational structure facilitates communication and decision-making, both of which are critical for the daily success of the program. A strong organizational framework provides the necessary administrative support to ensure that the curriculum is delivered professionally and consistently to all students in the institution.

170. (A) I, III, AND IV ONLY
A competent physical education professional must possess a combination of specific academic and personal qualities. Strong subject matter knowledge is essential for providing accurate instruction and ensuring student safety. Excellent communication and interpersonal skills are needed to teach and motivate students of all ages effectively. Furthermore, a deep commitment to student well-being and safety is a non-negotiable requirement of the profession. While a lack of enthusiasm would be a major disadvantage, the presence of knowledge, skills, and commitment are the primary characteristics of a successful and effective physical education teacher and leader.

171. (A) Quantifies the learning volume and helps in transferring credits between institutions.
The credit system in higher education is a standardized tool used to quantify the total volume of learning required for a course. It provides a consistent measure that allows for the comparison of different academic programs and the easy transfer of credits between institutions. This system is essential for maintaining educational standards and provides a transparent way for students to track their progress toward a degree. By using a universally recognized unit of measure, the credit system facilitates academic mobility and ensures that a student's achievements are recognized consistently across the higher education landscape.

172. (A) All the planned experiences, activities, and learning that students undertake.
The term 'curriculum' in physical education refers to the comprehensive set of all planned learning experiences and activities provided to the students. It includes the specific content to be taught, the teaching methods used, and the various assessment tools employed to measure student progress. A curriculum is much broader than just a list of sports or a final exam; it encompasses the entire educational journey designed to achieve specific physical and academic goals. This holistic framework ensures that all activities are purposeful and aligned with the overarching objectives of the physical education program.

173. (A) The need to have properly trained professionals instead of untrained ex-military personnel.
A primary driver for the development of professional teacher education in India was the recognition that physical education required specialized knowledge and pedagogical skills. Historically, many physical activities were led by untrained individuals, often with a military background, whose focus was on rigid drill. The move toward formal teacher education programs ensured that physical education would be led by professionals trained in sports science, child development, and modern teaching methods.

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training for various university sports teams. This structured approach ensures that the department can effectively manage its facilities, curriculum, and competitive programs while maintaining high academic and professional standards for both students and faculty.

210. (C) P-4, Q-1, R-2, S-3
International systems of physical education and sports reflect different historical legacies and organizational structures. Germany is notable for its widespread system of community-based sports clubs known as Verein. Australia has a very strong focus on sports science and high-performance training through its national institutes. The United States is characterized by a dominant system of school and collegiate athletics, particularly the NCAA. In the United Kingdom, the national curriculum and formal inspection bodies like Ofsted ensure that educational standards are consistently met. Each of these models provides unique insights into how different countries organize and promote physical education and sport.

211. (A) A Dynamic and continuous process of planning, implementing, and evaluating learning experiences.
Curriculum development is a central concept in physical education that is characterized as a dynamic and continuous process. It is not a one-time task but an ongoing cycle that involves careful planning, active implementation in the classroom, and systematic evaluation of the results. This continuous loop allows the curriculum to be refined and updated based on student needs, feedback, and new developments in the field. By being dynamic, the curriculum remains relevant and effective, ensuring that it continues to provide the best possible learning experiences and supports the evolving physical and developmental goals of all students over time.

212. (A) Infrastructure development.
A government policy that provides direct financial grants for building playgrounds and sports facilities is a clear example of promoting physical education through infrastructure development. High-quality facilities are essential for providing students with safe and effective spaces to participate in physical activities and sports. By investing in infrastructure, the government ensures that schools have the basic resources needed to deliver their physical education curriculum successfully. This support is vital for increasing sports participation and promoting national health by ensuring that students in all regions have access to the facilities they need to stay active and develop their athletic skills.

213. (D) Statement i is false, but statement ii is true.
The public sector's role in sports is primarily driven by social welfare and public health objectives, rather than a desire for commercial profit. This makes Statement I false. In reality, the public sector is responsible for at the national level formulating policy, providing high-level governance, and ensuring that all citizens have broad access to physical education and sports. This role includes setting national standards and funding infrastructure in educational institutions to benefit the general public. Thus, Statement II is true, as the government's primary mission is to create an equitable and supportive environment for sports and physical education for its citizens.

214. (A) Ensure the learning objectives of the course are met.
The careful selection of curriculum content is fundamentally important because it directly determines whether the program's learning objectives will be successfully achieved. Content should be chosen based on its ability to provide students with the specific knowledge and skills outlined in the curriculum. By aligning the content with these goals, educators ensure that every activity and lesson has a clear purpose. This organized approach prevents irrelevant activities and ensures that students progress in their development in a meaningful way. Proper content selection is essential for delivering a high-quality physical education that effectively meets the academic and physical needs of all learners.

215. (A) Both a and r are true and r is the correct explanation of a.
An integrated physical education program for boys and girls is highly beneficial for students' social development. By learning and competing together in a supervised, co-educational setting, students have many opportunities to develop mutual respect and cooperation. These programs

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help students learn how to interact with the opposite gender in a healthy and respectful way, while also developing essential social skills like teamwork and communication. This inclusive approach challenges traditional stereotypes and prepares students for life in a balanced and diverse society. Thus, both the assertion and reason are true, and the reason accurately explains the benefits of an integrated program.

216. (A) Fundamental motor skills through fun games and activities.
The most appropriate subject matter for physical education at the primary level is the development of fundamental motor skills through fun and engaging games. At this early stage of development, children need to build basic coordination and movement patterns such as running, jumping, and throwing. By using play-based activities, educators can make physical education an enjoyable experience, which is essential for building a positive relationship with movement. This foundational focus is developmentally appropriate and lays the necessary groundwork for students to participate in more complex and specialized sports and fitness programs as they mature and move through their education.

217. (A) Maximizing the effective use of limited time, space, and equipment.
In the context of physical education, a time-table is a vital tool for maximizing the effective use of shared resources such as playgrounds, gymnasiums, and sports equipment. Because these facilities and materials are often limited, a structured schedule is necessary to prevent conflicts and ensure that every class has the access it needs. A well-designed time-table also ensures that students receive a consistent and balanced physical education throughout the academic year. By organizing the daily schedule, the time-table supports efficient management and creates a professional environment that allows teachers to deliver the curriculum more effectively and for students to stay active regularly.

218. (A) The professionalization of the field.
The development of physical education teacher training in India, which has moved from simple drill instruction to advanced master's and doctoral degrees, is a clear sign of the field's professionalization. This transition reflects the recognition of physical education as a serious academic discipline that requires a deep understanding of sports science, pedagogy, and research. This higher level of training ensures that educators are equipped with the knowledge and skills to provide evidence-based instruction and contribute to the advancement of the field. This professionalization is essential for maintaining high standards in schools and universities and for promoting national health and athletic success through qualified leadership.

219. (A) Academic workload of a course.
The credit system in professional physical education courses is a concept used to standardize and measure the academic workload of each course unit. By assigning numerical values to the total hours of instruction, including lectures, tutorials, and practical sessions, the system provides a consistent way to quantify the volume of learning. This standardization is essential for maintaining educational quality and for the easy transfer of academic records between institutions. By using credits, administrators and students have a clear and transparent measure of the academic value and rigor of each course, which is vital for graduation requirements and professional certification in the field.

220. (A) I and II only
A comparative study of professional preparation in physical education provides valuable insights into how different countries approach the discipline. It helps educators understand the specific strengths and weaknesses of their own national system by providing a broader context for comparison. Additionally, such studies often reveal the unique historical and cultural factors that have shaped each country's approach to sports and teacher training. The goal is to learn from diverse models, rather than uncritically copying them. By understanding these differences, educators can make more informed decisions about how to improve their own systems while respecting their own national and cultural context.

221. (A) An overall state of physical, mental, and social well-being.
Promoting wellness is a key responsibility for physical education professionals that involves

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encouraging a holistic state of health. Wellness encompasses more than just physical fitness; it includes a balanced state of mental resilience and social competence. Educators promote this by teaching students the importance of a healthy lifestyle that integrates regular activity, good nutrition, and positive social interactions. By encouraging this multidimensional approach to health, teachers help students develop the habits needed for a high quality of life. This proactive focus on overall well-being empowers students to take responsibility for their own health and supports their successful development as whole individuals both during and after their school years.

222. (A) Ensure quality and standards in higher education.
Government agencies like the University Grants Commission play a critical role in monitoring the professional courses offered in physical education departments within universities. Their primary mission is to ensure that higher education maintains high academic quality and meets specific national standards. The UGC sets norms for faculty qualifications, supports research initiatives, and provides funding to improve infrastructure. By monitoring these institutions, the UGC ensures that the training provided to future physical education experts is rigorous, evidence-based, and consistent across the country. This oversight is vital for the academic integrity and professional advancement of the discipline at the higher education level.

223. (D) Rigid and unchangeable.
Effective curriculum planning must follow principles that ensure the program remains relevant and successful. A well-planned curriculum should be based on the needs and interests of the learners and follow a progressive and sequential structure. Furthermore, it must be flexible and adaptable to accommodate changes in student feedback, technological advancements, and new research findings. In contrast, making a curriculum rigid and unchangeable would be detrimental to its success. A static program cannot respond to evolving educational needs and student interests, which prevents it from being a truly effective tool for supporting comprehensive physical and academic development over time.

224. (A) There is a clear line of command from the principal to the director of pe to the teachers.
The organizational hierarchy at the college level is designed to ensure a clear line of command and efficient management. This structure typically begins with the College Principal, who oversees all departments, and includes a Director of Physical Education who provides leadership within the specific department. This hierarchy ensures that authority and responsibilities are clearly defined for all staff members. By having a clear organizational structure, the department can better manage its daily activities, coordinate sports events, and ensure accountability. This professional framework is essential for the smooth and successful operation of the physical education program and for achieving the institution's educational and athletic goals.

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225. (A) I, II, III, and V ONLY
Physical education professionals need a blend of formal qualifications and positive personal qualities to be successful. Qualifications for teachers vary appropriately based on the educational level at which they work. Key responsibilities include ensuring student safety, providing instruction, and assessing progress effectively. Additionally, good communication skills and a passion for the subject are essential for motivating students. While higher education requires advanced degrees like a Ph.D., this is not a standard requirement for primary level teachers. This combination of knowledge, skills, and personal enthusiasm is necessary to create a safe and engaging learning environment that supports the overall development of every participating student.

226. (A) Investment, sponsorship, and management of professional entities.
The private sector makes a significant contribution to the promotion of physical education and sports through financial investment and professional management. Corporate groups often fund specialized academies and sponsor major sports leagues and individual athletes. This involvement brings in new technology and marketing expertise, which increases the visibility and commercial success of various athletic disciplines. By establishing professional entities and high-performance training centers,

the private sector supplements government efforts and provides additional pathways for athlete development and sports promotion. This involvement is a critical part of a diverse and robust national sports ecosystem that offers a wide range of opportunities for participation and professional success.

227. (A) Be connected to the lives and culture of the students and community.
Relevance is a fundamental principle of curriculum planning that ensures the program is meaningful to the students. This means the physical education curriculum should be connected to the lives, culture, and interests of the pupils and the wider community. By making the content relevant, educators can increase student engagement and motivation. This approach respects the socio-cultural context of the school and ensures that the learning experiences provided are purposeful and applicable to real-life situations. A relevant curriculum supports a deeper understanding of the importance of physical activity and helps students build a positive and lifelong relationship with health, fitness, and sports.

228. (D) Statement i is false, but statement ii is true.
The content of a physical education curriculum must be tailored to the specific educational level, making the idea that it is the same for primary and higher education false. As correctly stated in Statement II, the primary level focuses on developing fundamental motor skills and movement patterns through fun activities. In contrast, higher education is far more specialized, focusing on advanced academic and scientific topics such as sports medicine, research methodology, and professional management. This progression ensures that the curriculum remains developmentally appropriate and provides a clear pathway from basic physical exploration to high-level professional expertise and scientific inquiry within the discipline.

229. (A) To improve student learning.
The ultimate and most important purpose of curriculum evaluation is to provide information that leads to the improvement of student learning. By systematically assessing the curriculum's effectiveness, educators can identify areas where the program is successfully achieving its goals and where adjustments are needed to better support the students. Evaluation is not about assigning blame, but about using objective evidence to refine the educational experience. A well-evaluated curriculum ensures that the program remains evidence-based, responsive to student needs, and effective in helping all pupils achieve their physical and developmental objectives for long-term health and athletic success.

230. (A) Video analysis for skill correction.
The use of video analysis tools is a clear and impactful example of technology in modern physical education. This technology allows teachers and coaches to record student performance and use slow-motion and annotation features for precise skill correction. By seeing their own movements visually, students can better understand technical errors and make the necessary adjustments more quickly. This objective feedback accelerates skill acquisition and helps refine complex techniques that might be difficult to improve through verbal instruction alone. The integration of such technology enhances the pedagogical effectiveness of the physical education program and provides students with a more scientific approach to their physical development.

231. (D) The complexity of the skills and concepts taught.
While physical education teachers at all levels have fundamental responsibilities like ensuring student safety, the primary difference in their roles lies in the complexity of the content delivered. Primary level teachers focus on developing basic movement patterns and fundamental motor skills through play and exploration. As students move to the secondary level, the focus shifts toward more complex game tactics, strategies, and the refined techniques of specific individual and team sports. This progression ensures that the curriculum remains developmentally appropriate, building student knowledge and ability systematically as they mature and move through the different stages of their physical and academic education.

232. (A) Socially inclusive and developmentally appropriate.
An integrated physical education program for boys and girls should be thoughtfully designed

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to be both socially inclusive and developmentally appropriate. This means the activities should be chosen and modified to ensure that all students can participate meaningfully and safely together, regardless of gender. The goal is to promote co-education and mutual respect through shared physical challenges and teamwork. By focusing on inclusion, these programs foster a positive social environment and challenge gender stereotypes. This approach ensures that the physical education experience is equitable and supports the healthy social and physical development of every student in the program, preparing them for a diverse and respectful society.

233. (A) Setting standards for professional courses.
A primary role for government agencies in physical education is the establishment and maintenance of standards for professional courses. Bodies like the National Council for Teacher Education set mandatory requirements for curriculum content, faculty qualifications, and infrastructure in institutions offering physical education degrees. By setting these standards, the government ensures that the training provided to future physical education teachers and administrators is high-quality and consistent across the country. This regulatory role is essential for maintaining the professionalism of the discipline and ensuring that graduates are well-prepared to contribute to national health and the effective delivery of sports and physical education programs.

234. (A) Sensitivity, ensuring equity while acknowledging physiological differences where relevant.
Handling the classification of subject matter with reference to sex requires a sensitive approach that prioritizes equity and inclusion. Modern curricula should aim to provide similar opportunities for all students while acknowledging and respecting physiological differences when they are relevant for safety or performance. This involves designing programs that allow for meaningful co-educational participation with appropriate modifications. The goal is to ensure that every student, regardless of gender, has a positive experience that supports their physical and social development. This approach fosters mutual respect and dismantling stereotypes, ensuring that physical education remains a supportive and equitable environment for all learners in the school community.

235. (C) P-3, Q-4, R-1, S-2
Understanding various curriculum concepts requires recognizing their distinct roles within an educational framework. Curriculum evaluation involves judging the overall merit and worth of a program to guide improvements. Planning is the systematic process used to design these learning experiences effectively. The impact of technology is seen in the use of modern tools like apps for fitness tracking and performance analysis to enhance student learning. Finally, an organizational hierarchy provides the necessary structure of authority, such as directors and heads of department, to ensure efficient management. Together, these concepts work to create a professional and effective physical education program that supports student achievement and growth.

236. (A) The integration of fitness and sports into the daily school curriculum.
Recent government policies in India, such as the Fit India movement, focus heavily on the integration of fitness and sports into the core of the daily school curriculum. The objective is to ensure that physical activity is not seen as an optional extra, but as an essential part of every student's daily routine. By making fitness a priority, these policies aim to combat sedentary lifestyles and promote a culture of health among the youth. This approach recognizes that regular physical activity is vital for comprehensive student development and long-term public health, ensuring that every child has the opportunity to build a strong and healthy physical foundation for their future.

237. (A) Selected and adapted to ensure maximum participation and benefit.
The subject matter for a curriculum designed for differently-abled pupils must be carefully selected and modified to ensure inclusion. The primary goal is to provide these students with the maximum opportunity for participation and benefit from physical activity. This requires teachers to use adaptive equipment, modified rules, and flexible activities that suit the unique abilities of each student. By focusing

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necessary structure for the daily delivery of the curriculum. It ensures that time, facilities, and equipment are used efficiently and prevents scheduling conflicts. Therefore, Statement I is true. However, the idea that a time-table is only for recording race times is false, as stated in Statement II. While it might include schedules for athletic events, its primary purpose is administrative and pedagogical organization. A well-designed time-table is fundamental for creating a professional and organized learning environment that ensures all students have consistent and structured opportunities for physical activity and educational growth throughout the academic year.

249. (C) The systematic evaluation of a curriculum's value and effectiveness.
Curriculum appraisal is best defined as the systematic and comprehensive evaluation of an educational program's overall value and effectiveness. This process involves analyzing various data sources, such as student performance and teacher feedback, to make informed judgments about whether the curriculum is achieving its intended goals. Appraisal is essential for ensuring educational quality and providing the objective evidence needed to guide future program improvements. It is a critical part of the curriculum development cycle, ensuring that the program remains high-quality and responsive to student needs. By appraising the curriculum, educators can ensure that the physical education program continues to evolve and provide the best possible learning experiences for all participating students.

250. (B) I, II, III, and IV ONLY
Planning a successful physical education curriculum requires considering several key factors that influence the program's effectiveness. Educators must take into account the developmental stage and age of the students, as well as the availability of necessary facilities, equipment, and qualified staff. The overall goals and philosophy of the institution and the specific needs and interests of the students are also critical considerations. A successful curriculum must be flexible and responsive to these factors. In contrast, making the curriculum exactly the same as a rival school's would be unnecessary and potentially ineffective, as every institution has its own unique context and student population that should drive its own specific curriculum planning and design.

251. (B) To critically analyze diverse approaches and identify best practices for adaptation.
Performing a comparative analysis of professional preparation in physical education enables educational planners to move beyond simple descriptions. This analytical approach allows for the identification of successful pedagogical strategies and curriculum structures from diverse global systems. By examining international standards, planners can adapt these proven methodologies to enhance the quality and relevance of indigenous teacher training programs.

252. (A) The integration of its club-based sports structure into professional training.
Germany possesses a distinctive club-based sports system that significantly influences how it prepares physical education professionals. This specific structural model shapes the training programs by integrating established community sports organization methods into the professional curriculum. Understanding this influence helps educational planners recognize how national sports cultures can dictate the specific requirements and frameworks of teacher education across different countries.

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253. (C) Greater emphasis on research and evidence-based practice.
The comparative analysis highlights that professional preparation models in countries like the USA and Australia are often characterized by a strong focus on research. This emphasis on evidence-based practice distinguishes their approach from more traditional or state-mandated training methods found elsewhere. Integrating scientific findings into pedagogical training ensures that future physical education professionals are equipped with modern, validated strategies.

254. (D) To strengthen the indigenous educational framework through informed adaptation.
The ultimate objective of studying international physical education systems is not to copy them directly but to strengthen the existing indigenous

profound and positive impact of technology in the field today.

243. (A) The structure and organization of the curriculum's components.
Curriculum design refers to the specific way an educational program's various components, such as content, activities, and learning experiences, are structured and organized. A well-constructed design ensures that there is a logical and progressive flow to the learning process, allowing students to build upon their knowledge and skills systematically over time. This architectural framework guides the delivery of the program and ensures that all activities are purposefully aligned with the overall educational goals. A clear curriculum design is essential for providing a coherent and effective physical education that supports the comprehensive development and health of all participating students throughout their entire academic journey in the school or college.

244. (A) System of private and community sports clubs (vereinskultur).
Germany's professional preparation for physical education is deeply influenced by its historical and powerful system of community-based sports clubs. This unique culture of sports participation outside of the traditional school system provides a strong foundation for national health and athlete development. These clubs serve as central hubs for athletic activity and community involvement across all age groups. A comparative study would highlight how this historical and cultural framework shapes the German approach to physical education, emphasizing the importance of community support and a strong decentralized network for talent identification and development. This model provides an alternative perspective on how a nation can effectively organize and promote sports for its citizens.

245. (B) I, II, and III only
Curriculum evaluation in physical education is a vital process used to gather objective information about a program's success. It serves several important purposes, including determining whether students are achieving the intended educational objectives and identifying areas where the curriculum can be refined for future improvement. Additionally, evaluation provides a way to assess the effectiveness of the teaching strategies used in the classroom or on the field. This constructive process is essential for ensuring educational quality and providing the objective evidence needed for continuous improvement. It is a tool for growth and accountability, helping to ensure that the physical education program remains effective and responsive to the needs of all participating students.

246. (A) To develop fundamental motor skills and a love for physical activity.
At the primary school level, the most significant responsibility of a physical education professional is to foster a child's fundamental motor skills and a genuine love for being active. This early stage of development is critical for building basic patterns like running, jumping, and throwing through fun and play-based activities. By focusing on coordination and movement exploration in a positive and enjoyable way, educators lay the foundation for a lifetime of healthy habits. This foundational work ensures that students have the confidence and ability needed to participate in more complex sports as they grow. Encouraging enjoyment and success at this early stage is key to creating a lifelong commitment to physical activity and wellness for every student.

247. (A) Variety
A curriculum that includes many different activities, such as gymnastics, swimming, team sports, and athletics, is based on the core principle of variety. Offering a wide range of sports ensures that the program appeals to the diverse interests and ability levels of all students. This varied approach keeps students engaged and motivated, preventing boredom and encouraging more consistent participation. It also provides a broader physical education that develops different motor skills and fitness components. By including a diverse selection of units, educators can create a more inclusive and effective curriculum that caters to all learners and helps them discover activities they might enjoy and continue practicing throughout their entire lives for health and fitness.

248. (C) Statement I is true, but statement II is false.
A time-table is an essential organizational tool in physical education because it provides the

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on what students can achieve and providing a supportive environment, educators ensure that physical education is accessible and meaningful for everyone. This inclusive practice values diversity and ensures that all pupils, regardless of their individual challenges, can experience the physical and social benefits of regular physical education and sports.

238. (C) Apathy towards student development.
Effective physical education professionals are characterized by a set of positive qualities that allow them to teach and motivate students successfully. These include having strong subject knowledge, excellent communication skills, and a genuine, enthusiastic attitude. Conversely, having an attitude of apathy toward student development would be a major disqualification for a teacher. Professionals in this field must be deeply committed to the growth and well-being of their students. Their passion and dedication are essential for creating a safe, engaging, and supportive learning environment that inspires students to achieve their potential and develop a lifelong habit of healthy physical activity and positive social engagement through sports.

239. (A) Creating policy, regulation, and ensuring access for the general population.
The public sector's role in promoting physical education is distinct and focuses on high-level governance and social welfare. Government bodies are responsible for creating the policies and regulations that provide a standardized framework for sports and education at the national level. Their primary mission is to ensure that all citizens, regardless of their background, have broad and equitable access to physical activity and sports through public funding and infrastructure in schools and communities. This public responsibility ensures that physical education remains an essential and accessible part of the national educational system, contributing to the overall health and well-being of the entire population through standardized and supported programs.

240. (A) Both A and R are true and R is the correct explanation of A.
The credit system in higher education is a vital tool for ensuring that academic achievements are consistent and easily recognized across different institutions. It provides a standardized and universally recognized unit that quantifies the total workload of a course, making it simple for students to transfer their records between universities. This system ensures uniformity in how educational effort is measured and provides a transparent framework for graduation requirements. Thus, both the assertion and reason are true, and the reason accurately explains how the credit system facilitates academic mobility and maintains educational quality and standards within the higher education landscape across the nation.

241. (B) Lakshmibai national institute of physical education (lnipe).
The establishment of specialized institutions like the Lakshmibai National Institute of Physical Education has been a key factor in the growth of teacher preparation in India. LNIPE provided a model for high-quality professional training that combines academic rigor with advanced practical skills in sports. These specialized institutions have played a critical role in standardizing teacher education and promoting physical education as a respected academic discipline. Their influence has been instrumental in the transition from basic physical training to the sophisticated degree and research-oriented programs available today. These institutes continue to produce the leaders and experts who drive the continuous scientific and professional development of the field across the entire nation.

242. (A) The impact of technology
Using video replays for skill correction is a powerful and direct application of technology in modern physical education. This tool allows teachers and students to see exactly how a movement is being performed, providing a level of visual feedback that verbal instruction cannot match. By slowing down or replaying a gymnastic move, the teacher can highlight specific technical points for improvement. This objective evidence helps students understand biomechanical concepts and make corrections more effectively. The integration of such technology into daily teaching and coaching enhances the pedagogical process and leads to more precise and faster skill acquisition for students, demonstrating the

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educational framework. By gaining insights from diverse global models, Indian educational planners can make informed adaptations that are contextually relevant. This strategic approach ensures that the national teacher preparation programs achieve higher quality and gain greater international recognition.

255. (C) Salary structures for physical education personnel.
Systematic comparative studies in physical education training typically focus on structural and pedagogical elements like curriculum content, teaching strategies, and accreditation standards. These factors are essential for benchmarking programs against global benchmarks and improving teacher quality. While administrative and academic components are central to such comparisons, financial compensation or specific salary structures are not typically included in the analysis.

256. (B) To ensure quality, standardization, and academic integrity of the programs.
Government agencies play a vital role in monitoring professional courses to maintain high academic standards and prevent the growth of substandard programs. Their oversight involves establishing benchmarks for quality and ensuring that institutions adhere to prescribed curriculum frameworks. This systematic regulation protects the integrity of the profession by certifying that all graduates receive a standardized and high-quality educational experience.

257. (D) Bureaucratic and developmental.
The function of government monitoring bodies in physical education extends beyond simple administrative tasks to include the growth of the discipline. These agencies act in both a bureaucratic capacity, by enforcing regulations, and a developmental capacity, by aligning teacher education with national goals. This dual role ensures that professional programs remain relevant while simultaneously upholding the necessary quality and excellence.

258. (A) Prescribing specific timetables for individual institutions.
Monitoring agencies focus on macro-level standards such as granting institutional recognition, setting minimum faculty qualifications, and reviewing program relevance. These bodies establish broad curriculum frameworks and infrastructure requirements to ensure consistency across the sector. However, the creation of specific daily timetables remains an internal administrative task for each individual institution rather than a direct responsibility of the national regulatory bodies.

259. (C) The proliferation of substandard professional programs.
Regulatory oversight by government agencies is essential for maintaining a specific benchmark of quality across professional courses. Without this systematic monitoring, the education system faces the significant risk of an increase in substandard programs that lack academic integrity. Consistent supervision ensures that all institutions meet the required standards for infrastructure and faculty, thereby protecting the credibility of the entire discipline.

260. (A) By establishing and enforcing benchmarks of quality and professional excellence.
Government agencies enhance the academic credibility of physical education by acting as custodians of professional excellence through the enforcement of rigorous standards. By setting norms for admission, course duration, and evaluation methods, they ensure that the discipline is respected and effective. This systematic approach ensures graduates are properly prepared for professional demands, thereby strengthening the status of physical education globally.

261. (D) Primary level focuses on fundamental motor skills, while secondary level is more specialized in sports.
At the primary level, physical education focuses on developing fundamental motor skills and a positive attitude toward activity. This foundational approach requires qualities like patience and enthusiasm to engage young children. In contrast, the secondary level transitions toward more specialized coaching, involving competitive sports and adolescent physiology. These evolving responsibilities reflect the specific developmental needs of students as they mature academically.

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262. (B) Patience, enthusiasm, and the ability to make activities fun.
Personnel working at the primary education level must possess specific interpersonal qualities to be effective with young learners. Success in this role depends on maintaining high levels of patience and enthusiasm while creating an engaging environment. These traits allow educators to make physical activities fun, which is essential for fostering a positive and lifelong attitude toward movement and personal health.

263. (C) From a generalist to a specialist and scholar-practitioner.
The role of a physical education professional is dynamic and changes significantly as they progress through different educational strata. An educator typically begins as a generalist at the primary level, focusing on broad motor development. As they move to secondary and higher education, the role evolves into that of a specialist and eventually a scholar-practitioner who focuses on advanced research.

264. (D) Advanced academic credentials, often including doctoral degrees.
In the higher education sector, physical education personnel are required to meet high academic standards to fulfill their complex roles. These professionals typically need advanced qualifications, such as doctoral degrees, to participate in specialized activities beyond teaching. Their responsibilities often encompass academic administration, curriculum development, and significant research contributions, demanding a deep commitment to advancing the discipline through scholarly and theoretical work.

265. (A) The role demands a dynamic and evolving set of competencies based on the educational level.
Physical education roles are not uniform across the education system but instead require a changing set of skills. Each level, from primary to higher education, necessitates different qualities, qualifications, and responsibilities tailored to student needs. This evolution from a generalist to a specialized scholar-practitioner ensures that educators can effectively handle tasks ranging from fundamental motor skill development to advanced research.

266. (B) Their scope has expanded to include the promotion of health, fitness, and wellness.
The professional scope for physical education personnel has moved significantly beyond traditional sports coaching and gym instruction. They are now recognized as essential contributors to the public health mission, focusing on the promotion of overall wellness and fitness. This expanded role involves acting as health advocates within the community, using their specialized knowledge to foster healthy lifestyles among diverse populations.

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267. (B) By designing programs to combat issues like obesity and sedentary behavior.
Physical education professionals address modern health issues such as obesity and sedentary behavior by designing targeted fitness and wellness programs. Utilizing their expertise in exercise science and human physiology, they provide personalized activity recommendations to help individuals improve their quality of life. These interventions are crucial for reducing the prevalence of lifestyle-related diseases and fostering a culture of health within society.

268. (A) Wellness coordinator and health advocate.
Modern physical education professionals are undergoing a transformation from being traditional teachers of sport-specific skills to serving as wellness coordinators. In this capacity, they act as health advocates who promote physically active lifestyles beyond the school environment. Their work helps to institutionalize fitness cultures, making them vital assets in the public health ecosystem by addressing broad socio-economic challenges through activity.

269. (C) Expertise in exercise science, nutrition, and human physiology.
Success in the expanded role of health promotion requires physical education personnel to have deep knowledge in specific scientific areas. Understanding exercise science, human physiology, and nutrition allows these professionals to design effective fitness interventions and assessments. This scientific foundation enables them to provide credible education on the benefits of being active and helps individuals successfully prevent various lifestyle-related health problems.

270. (D) Reducing public healthcare burdens by preventing lifestyle diseases.
By promoting health and wellness, physical education professionals contribute to the economy by decreasing the overall burden on the public healthcare system. Their efforts to prevent lifestyle-related diseases through active living and education lead to a healthier and more productive workforce. This work highlights the broader societal importance of the profession, as it improves quality of life while minimizing medical costs.

271. (C) To integrate physical education into the core of the educational process.
Current government policies in India aim for a strategic shift that moves physical education from the periphery to the center of schooling. This holistic approach ensures that physical activity is not just an optional extra but a fundamental part of the learning experience for every student. By integrating sports into the core curriculum, the government seeks to develop more resilient youth.

272. (B) Achieving national development and fostering values in youth.
Physical education and sports are utilized by national policies as powerful tools for broader development goals. These initiatives aim to instill essential values like discipline, resilience, and teamwork in the younger generation. By fostering these character traits through sports, the government hopes to contribute to the nation's human resource development and create a more robust sporting culture across all levels.

273. (D) To create a pathway for talent identification and development from the grassroots level.
A specific focus of modern sports policies is the establishment of a clear and seamless continuum for athlete growth. This involves creating systematic pathways that identify and develop talent starting at the grassroots level and moving toward elite performance. By connecting school-level activities with national structures, these policies ensure that talented individuals receive the support needed to succeed in competitive sports.

274. (A) It connects school-level activities with higher education and national sports structures.
The sports ecosystem described in policy frameworks is designed to be a connected network rather than a series of isolated initiatives. This structure links activities happening at the school level with college, university, and national-level sports organizations. Such integration allows for a consistent progression of talent and infrastructure, ensuring that the development of physical education is supported throughout every educational stage.

275. (C) To cultivate a sporting culture and improve the nation's health and fitness profile.
The long-term objective of these comprehensive policies is to improve the overall fitness profile of the nation while building a strong sporting culture. By making physical activity inclusive and accessible to all students, the government recognizes physical education as an essential part of human development. This strategic focus aims to enhance public health and ensures that sports become a standard practice.

276. (A) To delineate roles, responsibilities, and communication channels.
Organizational hierarchies in physical education institutions are essential for establishing clear structures that define specific roles and responsibilities. These frameworks facilitate efficient communication and ensure that all staff members understand their reporting lines. By delineating these boundaries, institutions can achieve systematic planning and accountability, which are necessary for the successful delivery of physical education programs and the effective management of resources.

277. (D) The School Principal or Vice-Principal.
At the school level, the organizational structure is generally straightforward and direct. The individual serving as the Head of the Physical Education Department is typically responsible for managing facilities and delivering the curriculum. To ensure proper administrative oversight and coordination, this person usually reports directly to the school Principal or Vice-Principal, who holds ultimate authority over the institution's educational activities and staff.

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9. Which of the following is NOT considered a primary preventive measure against communicable diseases?
(A) Immunization
(B) Hand washing
(C) Undergoing surgery for a diagnosed infection
(D) Maintaining good personal hygiene

10. Read the following assertion and reason and select the correct option.
Assertion (A) : Sedentary lifestyles are a major contributing factor to the rise of psychosomatic disorders.
Reason (R) : Lack of physical activity can lead to chronic stress, poor sleep, and hormonal imbalances, which manifest as physical symptoms originating from mental or emotional distress.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

11. Hypertension, Type 2 diabetes, and coronary artery disease are most commonly associated with which condition?
(A) Malnutrition
(B) Vitamin A deficiency
(C) Anemia
(D) Obesity

12. The concept of 'body weight control' is significant for health primarily because:
(A) It ensures a specific aesthetic appearance.
(B) It helps manage various lifestyle diseases.
(C) It ensures elite-level athletic performance.
(D) It is a legal requirement for employment.

13. What is the most effective long-term strategy for weight control?
(A) Following a short-term restrictive crash diet.
(B) Exercising daily without changing nutrition.
(C) Balancing moderate exercise with a stable diet.
(D) Using supplements as the primary weight method.

14. Match the first aid situation with the appropriate immediate action.
List I : (Situation)
P. Chemical burn in the eye
Q. Severe external bleeding
R. Unconscious person, not breathing
S. Minor burn on the skin
List II : (Immediate Action)
1. Apply direct pressure
2. Start CPR
3. Flush with cool running water for 15-20 minutes
4. Flush with large amounts of clean water for at least 15 minutes
Codes:
(A) P-4, Q-1, R-2, S-3
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-3, R-1, S-2
(D) P-2, Q-4, R-1, S-3

15. One of the fundamental principles of first-aid is to:
(A) Prevent the condition from worsening.
(B) Administer medication immediately.
(C) Move the victim without intervention.
(D) Diagnose the exact medical condition.

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16. In the context of first aid for shock, what is the most appropriate initial step for a conscious victim?
(A) Give them a hot beverage to drink.
(B) Place them down with feet elevated.
(C) Encourage them to walk for circulation.
(D) Administer a standard painkiller.

17. Which of the following is a primary health effect associated with long-term exposure to high levels of air pollution?
(A) Improved cardiovascular function
(B) Chronic respiratory system diseases
(C) Reduced risk of skin cancer
(D) Enhanced cognitive abilities

18. Consider the following actions related to water quality:
A. Boiling water before drinking.
B. Proper treatment of sewage before discharge.
C. Banning the dumping of industrial waste into water bodies.
D. Using organic farming methods to reduce

286. (D) Learner-centricity.
Curriculum planning in physical education is a systematic process where learner-centricity serves as a fundamental guiding concept. This principle ensures that the educational plan is relevant to students and aligns with their specific developmental stages. By focusing on the needs and interests of the learners, educators can create engaging experiences that lead to the achievement of desired physical and cognitive outcomes.

287. (C) Logically sequencing learning experiences from simple to complex.
The principle of progression is essential for effective physical education as it dictates the logical sequencing of the curriculum. Learning experiences are carefully arranged to move students from simple motor skills to more complex movements and theoretical concepts over time. This systematic approach ensures that students build a solid foundation before advancing to specialized sports tactics, promoting steady development and long-term mastery.

288. (B) Primary focuses on fundamental skills, while secondary involves more specialized sports and tactics.
Subject matter in physical education evolves significantly as students transition from primary to secondary education. At the primary level, the curriculum prioritizes fundamental movement skills and basic health habits through creative play. In contrast, the secondary level introduces specialized sports skills and tactical understanding. This transition reflects the increasing physical and cognitive abilities of students as they move through different school levels.

289. (D) Highly specialized and theoretical.
In higher education, the curriculum for physical education shifts toward a more scholarly and professional focus. The subject matter becomes highly specialized, incorporating theoretical disciplines such as exercise physiology, sports biomechanics, and research methodology. This advanced training prepares students for careers in academia, administration, and professional coaching, demanding a deep understanding of the scientific and theoretical principles that underpin the entire field.

290. (A) Offering a wide variety of activities to cater to different interests and skills.
A balanced physical education curriculum is designed to offer a diverse range of activities that appeal to various student interests. This variety is crucial for developing skills across the motor, cognitive, and affective domains. By providing different types of experiences, the curriculum ensures that all students can find success and develop a broad set of competencies that support their overall personal development.

291. (C) To create meaningful, accessible, and inclusive learning experiences.
The classification of physical education subject matter based on age, sex, and ability is vital for ensuring that every student can participate. This tailored approach allows curriculum designers to create learning experiences that are both accessible and meaningful for diverse learners. By considering these individual differences, educators can foster an inclusive environment that promotes success for all students, including those with different abilities.

292. (A) To foster co-educational participation, cooperation, and equal opportunity.
Integrated programmes for boys and girls aim to move away from traditional gender segregation in physical education. By encouraging co-educational participation in a wide variety of activities, these programs promote mutual respect and cooperation among students. This modern approach ensures that all individuals have equal opportunities to develop their skills and fosters a more inclusive and supportive learning environment for everyone involved.

293. (D) By adapting or modifying subject matter for safe and meaningful participation.
Modern curriculum design emphasizes that differently abled pupils must have access to safe and meaningful learning opportunities. This is achieved by adapting or modifying the subject matter to fit their individual capabilities and developmental potential. Such differentiation ensures that these students are not excluded from physical education but are instead given the support needed to succeed and improve their physical well-being.

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52. What does 'prevention' in the context of drug abuse refer to?
(A) Medical treatment of withdrawal symptoms.
(B) Legal prosecution of illegal drug users.
(C) Process of reintegrating former users.
(D) Actions taken to stop drug use early.

53. Social health, as a dimension of the health spectrum, refers to:
(A) The complete absence of disease.
(B) Performing daily tasks without fatigue.
(C) Forming satisfying interpersonal relations.
(D) The size of a social media following.

54. One of the core principles of health education is 'credibility'. This means that the information provided must be:
(A) Entertaining and dramatic.
(B) Scientifically accurate and reliable.
(C) Simple enough for children.
(D) Based on popular opinion.

55. Consider the following components of a school programme:
A. Healthful School Environment
B. School Health Services
C. Health Education
D. Nutritional Services
E. Advanced Athletic Coaching
Which of the above are typically included in a comprehensive school health programme?
(A) A, B, C, D
(B) B, C, D, E
(C) A, C, D, E
(D) A, B, E

56. Read the following assertion and reason and select the correct option.
Assertion (A) : The combination of exercise and dieting is generally more effective for weight control than either method alone.
Reason (R) : Exercise increases energy expenditure and builds muscle mass, while dieting controls energy intake, creating a more significant and sustainable energy deficit.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

57. An example of a private health-promoting agency in India is the:
(A) Central Health Education Bureau (CHEB)
(B) Directorate General of Health Services (DGHS)
(C) Indian Council for Child Welfare (ICCW)
(D) National Institute of Nutrition (NIN)

58. The process of introducing a weakened or inactivated pathogen into the body to stimulate an immune response is known as:
(A) Sanitation
(B) Immunization
(C) Pasteurization
(D) Sterilization

59. Which condition is a classic example of a psychosomatic disorder where emotional stress can trigger skin inflammation?
(A) Scurvy
(B) Tuberculosis
(C) Chickenpox
(D) Eczema

60. The role of exercise in weight control extends beyond burning calories; it also helps to:
(A) Boost metabolism by building muscle.
(B) Lower the need for essential nutrients.
(C) Remove the need for balanced eating.
(D) Convert fat cells directly into muscle.

61. Which of the following is a primary objective of first aid?
(A) To provide a definitive medical diagnosis.
(B) To replace the need for professional medical help.
(C) To promote recovery.
(D) To administer prescription medications.

62. What is the correct first-aid procedure for a first-degree burn (e.g., a minor sunburn)?
(A) Use cool water or a wet compress.
(B) Apply butter or oil to the area.
(C) Puncture any blisters that appear.
(D) Apply a tight, dry cloth bandage.

63. Which type of pollution is primarily caused by excessive and unwanted man-made sounds that are harmful to health?
(A) Radiation pollution
(B) Air pollution

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CHAPTER 06

Health Education and First Aid

1. Which of the following best defines the 'spectrum of health'?
(A) A standardized catalog of various human diseases.
(B) A dynamic continuum from wellness to death.
(C) A genetic map indicating specific health risks.
(D) A community network of medical care services.

2. Which of the following is a key principle of health education?
(A) Integrating existing learner experiences.
(B) Emphasizing theory over practical skills.
(C) Using complex medical terms for accuracy.
(D) Promoting the passive intake of information.

3. Read the following statements and select the correct option.
Statement I : Genetics determines an individual's health potential entirely, irrespective of environmental factors.
Statement II : Environmental factors such as sanitation, nutrition, and pollution can significantly impact the expression of an individual's genetic health blueprint.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

4. A 'health appraisal' within a community health programme primarily aims to:
(A) Distribute free medication to community members.
(B) Construct new local hospitals and health clinics.
(C) Penalize individuals for unhealthy lifestyle habits.
(D) Assess the health status of the entire community.

5. Which international agency, a specialized agency of the United Nations, is responsible for international public health?
(A) UNESCO (Science and Culture)
(B) UNICEF (Children's Emergency)
(C) WHO (World Health Organization)
(D) Red Cross (International Relief)

6. The primary purpose of 'health instructions' in a school health programme is to:
(A) Treat sick students in the school infirmary.
(B) Promote healthy student attitudes and habits.
(C) Perform mandatory physical fitness testing.
(D) Report hygiene issues to student parents.

7. Consider the following statements about personal hygiene as part of a school health programme.
1. It involves practices that promote health and prevent the spread of disease.
2. It is limited only to handwashing.
3. It includes dental care, bathing, and cleanliness of clothes.
4. It has no impact on an individual's social well-being.

Which of the above statements are correct?
(A) 1 and 2 only
(B) 2 and 4 only
(C) 1 and 3 only
(D) 3 and 4 only

8. What is the most common mode of transmission for communicable diseases like the common cold and influenza?
(A) Droplet infection (e.g., coughing and sneezing).
(B) Vector-borne transmission (e.g., mosquitoes).
(C) Blood-borne transmission through contact.
(D) Contaminated food and water consumption.

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(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

29. Which of the following is a government health agency in India responsible for biomedical and health research?
(A) Indian Red Cross Society
(B) World Health Organization (WHO)
(C) Indian Council of Medical Research (ICMR)
(D) The Hind Kusht Nivaran Sangh

30. Immunization works by:
(A) Generating antibodies via the immune system.
(B) Killing all bacteria present during injection.
(C) Providing a physical barrier on the skin surface.
(D) Immediately curing an existing infectious disease.

31. Consider the following conditions:
1. Tension headaches
2. A simple fracture from a fall
3. Irritable Bowel Syndrome (IBS)
4. A bacterial infection

Which of the above are considered psychosomatic disorders, where psychological factors can cause or worsen physical symptoms?
(A) 1 and 4 only
(B) 2 and 4 only
(C) 1 and 3 only
(D) 2 and 3 only

32. The primary cause of obesity is:
(A) An airborne communicable disease.
(B) A long-term positive energy imbalance.
(C) A purely unalterable genetic disorder.
(D) Drinking excessive amounts of water.

33. Which of the following describes the role of 'dieting' in weight control?
(A) Completely eliminating all carbohydrates.
(B) Reducing calories via controlled intake.
(C) Eating once daily regardless of quantity.
(D) Consuming only liquid foods for a period.

34. A person has ingested a corrosive poison like a strong acid. What is the recommended first-aid action?
(A) Give them milk or water to drink to dilute the poison.
(B) Induce vomiting immediately.
(C) Attempt to neutralize the acid by giving a strong alkali.
(D) Wait for medical help without any intervention.

35. The term 'decibel' (dB) is a unit used to measure the intensity of:
(A) Air pollution
(B) Water turbidity
(C) Sound
(D) Radiation

36. Which nutrient is the body's primary and most efficient source of energy?
(A) Proteins
(B) Vitamins
(C) Minerals
(D) Carbohydrates

37. What is the main cause of nutritional deficiencies?
(A) Overconsumption of daily calories.
(B) Engaging in regular physical activity.
(C) Inadequate intake of essential nutrients.
(D) Consuming a diet very high in fiber.

38. Which of the following is an immediate effect of alcohol consumption?
(A) Enhanced memory and focus.
(B) Impaired coordination and slowed reaction time.
(C) Improved judgment and decision-making.
(D) Increased body temperature.

39. The most fundamental objective of health education is to:
(A) Mandate changes in personal habits.
(B) Market various health-related products.
(C) Document the local disease prevalence.
(D) Foster voluntary health behavior change.

40. Which pair of factors represents the interplay of 'genetics and environment' in health?
(A) Diabetes risk and high-sugar intake.
(B) Genetic age and biological gender.

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pesticide runoff.
E. Increasing the use of plastic bottles for water storage.

Which of the above are considered preventive measures against water pollution?
(A) A, B, and C only
(B) B, C, and D only
(C) A, D, and E only
(D) C, D, and E only

19. The components of a balanced diet are best described as:
(A) Only carbohydrates and fats for energy.
(B) A diet consisting of only fresh produce.
(C) All essential nutrients in proper ratios.
(D) Any meal that satisfies physical hunger.

20. A nutritional deficiency of Vitamin D in children can lead to a condition characterized by soft and weak bones, known as:
(A) Scurvy
(B) Pellagra
(C) Beriberi
(D) Rickets

21. What is the most accurate description of malnutrition?
(A) Only being significantly underweight.
(B) A problem limited to low-income areas.
(C) Imbalanced intake of specific nutrients.
(D) A lack of daily multivitamin pills.

22. Which of the following is a long-term health effect directly linked to chronic smoking?
(A) Improved lung capacity
(B) Chronic Obstructive Pulmonary Disease (COPD)
(C) Decreased risk of heart disease
(D) Lower blood pressure

23. The 'rehabilitation' phase for a person recovering from drug addiction primarily focuses on:
(A) Punishing individuals for past substance use.
(B) Providing a short-term medical detox only.
(C) Isolating individuals from family and friends.
(D) Assisting in the reintegration into society.

24. Which of the following is an INCORRECT statement regarding the effects of alcohol on health?
(A) Moderate alcohol consumption improves reaction time and coordination.
(B) Chronic heavy drinking can lead to liver cirrhosis.
(C) Alcohol acts as a depressant on the central nervous system.
(D) Alcohol abuse is linked to an increased risk of various cancers.

25. Arrange the general stages of a community health programme in the correct chronological sequence.
1. Implementation of the planned interventions.
2. Evaluation of the programme's effectiveness.
3. Assessment of the community's health needs.
4. Planning of health interventions based on the assessment.

(A) 3, 4, 1, 2
(B) 1, 2, 3, 4
(C) 4, 3, 1, 2
(D) 3, 1, 4, 2

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26. The objective of health which pertains to an individual's ability to think clearly, reason, and cope with stress is referred to as:
(A) Mental health
(B) Physical health
(C) Social health
(D) Spiritual health

27. 'Health-related physical fitness' includes all of the following components EXCEPT:
(A) Cardiorespiratory endurance
(B) Muscular strength
(C) Flexibility
(D) Agility

28. Read the following assertion and reason and select the correct option.
Assertion (A) : Maintaining proper personal hygiene is a critical component of a school health programme.
Reason (R) : Good hygiene practices, such as regular handwashing, can significantly reduce the transmission of communicable diseases among students.

294. (B) Differentiation.
The intentional adjustment of curriculum content and delivery to meet the diverse needs of learners is known as differentiation. This process involves modifying activities based on age, sex, and individual abilities to ensure that education is equitable and effective. Differentiation is fundamental to creating an inclusive classroom where every child can engage with the material and develop a lifelong appreciation for physical activity.

295. (C) Create accessible learning experiences for every student.
The primary importance of effective curriculum design lies in its capacity to make education accessible to all students regardless of their background or ability. A well-designed plan uses systematic principles to ensure that learning experiences are inclusive and developmentally appropriate. This focus on accessibility is the foundation for creating an equitable environment where every child has the opportunity to succeed and thrive.

296. (D) It formalizes the subject's academic weight and allows for standardized evaluation.
A credit system is used in physical education to provide the subject with formal academic recognition and weight. By assigning specific credits to both theory and practical courses, the discipline is integrated into the broader educational structure. This formalization allows for standardized evaluation and clear progression for students, ensuring that their achievements in physical education are recorded and valued like other subjects.

297. (A) As a transformative force that enhances teaching and assessment.
Technology acts as a transformative force in physical education, significantly improving both instruction and performance assessment. Tools like video analysis software and wearable fitness devices provide objective data that helps in skill correction and monitoring. These modern aids increase student engagement and offer new instructional pathways, making the learning process more effective and data-driven for both the teachers and their students.

298. (B) To appraise the effectiveness of the educational program for continuous improvement.
Curriculum evaluation is a systematic process used to determine how well an educational program is achieving its intended goals. Its main purpose is to appraise the curriculum's objectives, content, and final outcomes rather than just grading individual students. By collecting and analyzing data, educators can make informed decisions that lead to continuous improvements, ensuring the program remains both relevant and effective.

299. (B) A well-constructed time-table.
Efficient time and facility management in physical education relies on the use of a well-constructed time-table. This fundamental teaching aid ensures that both theoretical and practical sessions are allocated sufficient time and that available resources are used optimally. A clear schedule allows for a structured delivery of the curriculum, preventing conflicts and ensuring that all components of the program are properly addressed.

300. (A) The appraisal of the curriculum's objectives, content, and outcomes.
The process of curriculum evaluation focuses on a systematic appraisal of a program's core components, including its objectives and outcomes. By analyzing these elements, educators can judge the overall effectiveness of the instruction and content. This objective analysis is essential for facilitating ongoing improvements and ensuring that the physical education curriculum continues to meet the evolving needs of students and professional standards.

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(C) Yearly income and career occupation.
(D) Education level and marital status.

41. Read the following statements and select the correct option.
Statement I : The school health programme is solely the responsibility of the school nurse.
Statement II : An effective school health programme involves cooperation between teachers, parents, students, and community health services.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

42. Match the communicable disease with its primary mode of prevention.
List I : (Disease)
P. Tetanus
Q. Malaria
R. Cholera
S. Measles
List II : (Prevention)
1. Ensuring safe drinking water and sanitation
2. MMR Vaccine
3. Tetanus Toxoid (TT) immunization
4. Mosquito control measures
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-4, R-1, S-2
(C) P-2, Q-1, R-4, S-3
(D) P-3, Q-1, R-2, S-4

43. A sedentary lifestyle is characterized by:
(A) High levels of regular physical activity.
(B) A diet that is high in fruits and vegetables.
(C) Significant time sitting with minimal exercise.
(D) Participation in competitive sports.

44. Which of the following is a potential health problem directly related to obesity?
(A) Increased flexibility
(B) Enhanced immune response
(C) Goitre
(D) Sleep apnea

45. From a health perspective, what is the main significance of controlling body weight?
(A) Reducing strain on joints and the heart.
(B) Conforming to specific media trends.
(C) Wearing smaller standardized clothing.
(D) Maximizing the basal metabolic rate.

46. When applying first aid for a person who has fainted due to heat, but is conscious, what is an appropriate action?
(A) Provide a warm heavy blanket.
(B) Offer cool water in a shaded area.
(C) Make them sit up immediately.
(D) Provide a caffeinated stimulant.

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47. What is the first-aid treatment for a conscious victim of drowning after they have been removed from the water?
(A) Perform the Heimlich maneuver.
(B) Give them hot food immediately.
(C) Provide warmth and request medical aid.
(D) Encourage running to expel excess water.

48. Acid rain is a form of precipitation containing acidic components, such as sulfuric or nitric acid, that is caused primarily by which type of pollution?
(A) Water pollution
(B) Sound pollution
(C) Radiation pollution
(D) Air pollution

49. Which of the following is considered a macronutrient?
(A) Vitamin C
(B) Protein
(C) Iron
(D) Zinc

50. Nutritional supplements should be used primarily:
(A) To treat medically diagnosed deficiencies.
(B) To replace a standard balanced diet.
(C) By everyone regardless of health status.
(D) To achieve rapid weight loss goals.

51. The addictive substance found in tobacco products is:
(A) Tar
(B) Carbon monoxide
(C) Nicotine
(D) Ammonia

278. (B) The university level.
The organizational set-up for physical education becomes increasingly sophisticated as the level of education rises. While school and college structures are more localized, the university level features the most complex hierarchy. It involves a Director who oversees multiple departments across constituent colleges while formulating university-wide policies and reporting to high-level governing bodies such as a Sports Council or a Vice-Chancellor.

279. (C) Formulating university-wide sports policies.
The Director of Physical Education at the university level holds a senior administrative position with broad responsibilities. A central part of this role involves the formulation of policies that govern sports and physical activity across the entire university system. This official also manages facilities and oversees departmental heads, ensuring that the institution's sports programs are executed in a coordinated and systematic manner.

280. (D) Guaranteed victories in competitions.
Hierarchical organizations in physical education provide several administrative advantages, such as systematic planning and efficient resource allocation. These structures also establish clear accountability for staff members and facilitate the coordinated execution of institutional policies. While such organization improves program delivery and efficiency, it cannot provide a guarantee of success or victory in sports competitions, which depends on many other performance factors.

281. (A) Creating policy, infrastructure, and ensuring broad-based access.
The public sector provides the essential groundwork for physical education by focusing on policy formulation and the development of broad-based infrastructure. Government bodies at various levels work to ensure that all citizens have equitable access to physical activity within the formal education system. Their primary focus remains on mass participation and grassroots development, creating an environment where healthy lifestyles can be fostered nationwide.

282. (B) Bringing financial investment, professional management, and specialized expertise.
Private sector involvement in sports is characterized by the provision of significant financial investment and professional management skills. Corporations and sports firms contribute specialized expertise that helps in establishing high-quality training academies and professional leagues. These contributions drive commercial viability and innovation within the sporting industry, which complements the foundational work performed by the public sector in creating a robust culture.

283. (B) Complementary and synergistic.
The development of a holistic model for physical education relies on a relationship where both public and private entities work together in tandem. These sectors play distinct yet complementary roles that create a powerful synergy for promoting sports. While government policies ensure inclusivity and broad access, private enterprise drives excellence and innovation, resulting in a balanced approach that elevates the entire profession.

284. (A) Public sector focuses on participation; private sector focuses on excellence and commercial viability.
Public sector agencies primarily direct their efforts toward ensuring mass participation and creating an equitable environment for all individuals at the grassroots level. Conversely, the private sector often prioritizes the pursuit of elite excellence and the development of commercially viable sports products and events. This division of focus ensures that both the foundational and high-performance aspects of sports are addressed.

285. (C) The collaboration and tandem working of both public and private sectors.
Achieving a complete and effective model for sports development in a nation requires the close collaboration of government and private organizations. These two sectors must work in tandem to combine public policy objectives with private sector investment and professional expertise. This partnership ensures that the status and reach of physical education are expanded, providing both wide-scale participation opportunities and pathways for professional success.

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(C) Thermal pollution
(D) Sound pollution

64. Proteins are essential in a balanced diet for:
(A) Providing immediate energy for work.
(B) Building and repairing body tissues.
(C) Insulating the body and organs.
(D) Regulating the core body temperature.

65. A condition characterized by a deficiency of red blood cells or hemoglobin in the blood, often caused by a lack of iron, is known as:
(A) Goitre
(B) Anemia
(C) Rickets
(D) Scurvy

66. Which organ is most severely affected by chronic alcohol abuse?
(A) Liver
(B) Lungs
(C) Skin
(D) Kidneys

67. Which of the following is an example of an unhealthy coping mechanism for stress, which health education would seek to prevent?
(A) Practicing mindfulness meditation.
(B) Engaging in regular physical activity.
(C) Smoking cigarettes.
(D) Talking to a trusted friend or counselor.

68. Arrange the following steps for providing first aid to a conscious choking adult in the correct chronological order.
1. Encourage the person to keep coughing.
2. Ask "Are you choking?" to confirm obstruction.
3. Perform abdominal thrusts (Heimlich maneuver).
4. Give five back blows between the shoulder blades.

(A) 2, 1, 4, 3
(B) 1, 2, 3, 4
(C) 4, 3, 2, 1
(D) 2, 4, 1, 3

69. In the context of a school health programme, 'healthful school living' refers to:
(A) The curriculum taught in health classes.
(B) The annual sports day events.
(C) A safe and hygienic school environment.
(D) The academic performance of students.

70. The measles, mumps, and rubella (MMR) vaccine protects against diseases caused by:
(A) Bacteria
(B) Viruses
(C) Fungi
(D) Protozoa

71. Consider the following symptoms:
1. High blood pressure
2. Increased energy levels
3. Weight gain, especially around the abdomen
4. Improved insulin sensitivity

Which of the above are common symptoms associated with sedentary lifestyle diseases?
(A) 1 and 3 only
(B) 2 and 4 only
(C) 1 and 4 only
(D) 2 and 3 only

72. In the context of weight control, the term 'energy balance' refers to the relationship between:
(A) Total calories consumed and expended.
(B) Grams of protein and fat consumed.
(C) Hours of sleep and exercise performed.
(D) Intake of vitamins and minerals.

73. The primary reason for not giving water or other fluids to an unconscious person is the risk of:
(A) Causing a sudden drop in body temperature.
(B) Inducing a diabetic coma.
(C) Choking or aspiration into the lungs.
(D) Diluting the blood too much.

74. If a person receives a severe electric shock and is still in contact with the source, what is the first aider's immediate priority?
(A) Turn off the power or use a non-conductor.
(B) Pull the person away with your bare hands.
(C) Pour water on the person to stop the electricity.
(D) Immediately start chest compressions.

75. Exposure to ultraviolet (UV) radiation, a component of sunlight, is a major risk factor for:
(A) Bronchitis
(B) Liver cirrhosis
(C) Hearing loss
(D) Skin cancer

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quality.
(C) Boiling water that is known to be contaminated.
(D) Using earplugs at a loud concert.

141. Night blindness is a classic symptom of a deficiency in which nutrient?
(A) Vitamin C
(B) Calcium
(C) Vitamin A
(D) Iron

142. The tar in cigarette smoke is particularly harmful to the respiratory system because it:
(A) Is a highly addictive substance.
(B) Is a sticky, carcinogenic lung coating.
(C) Replaces oxygen in the bloodstream.
(D) Causes an immediate increase in heart rate.

143. The "spectrum of health" model is useful in public health because it:
(A) Proves that health is a static, unchangeable state.
(B) Focuses only on the treatment of terminal illnesses.
(C) Suggests that everyone is either perfectly healthy or critically ill.
(D) Tracks fluctuating health and interventions.

144. Which of the following is a principle of health education related to motivation?
(A) Health decisions involve personal and social goals.
(B) Using fear and shame are the most effective long-term motivators.
(C) Motivation is irrelevant; people will change if you give them enough facts.
(D) External rewards are the only effective way to motivate health behavior change.

145. What is the primary cause of symptoms in communicable diseases?
(A) A psychological reaction to being diagnosed.
(B) A deficiency in essential vitamins.
(C) Immune response and pathogen damage.
(D) The side effects of the immunization vaccine.

146. A person is found unconscious and not breathing. After ensuring the scene is safe and calling for help, what is the most critical first-aid action?
(A) Check for a medical alert bracelet.
(B) Begin cardiopulmonary resuscitation (CPR).
(C) Elevate their legs.
(D) Give them water.

147. Arrange the following steps of the RICE protocol for a sprained ankle in the correct chronological order.
1. Apply a compression bandage.
2. Elevate the injured ankle above heart level.
3. Rest the ankle and avoid putting weight on it.
4. Apply an ice pack to the injured area for 15-20 minutes.

(A) 3, 4, 1, 2
(B) 1, 2, 3, 4
(C) 4, 3, 2, 1
(D) 2, 1, 4, 3

148. A balanced diet should contain carbohydrates, proteins, and fats in a specific ratio. A commonly recommended ratio for the general population is approximately:
(A) 10% Carbohydrates, 60% Protein, 30% Fat
(B) 60% Carbohydrates, 15% Protein, 25% Fat
(C) 25% Carbohydrates, 25% Protein, 50% Fat
(D) 15% Carbohydrates, 35% Protein, 50% Fat

149. Which of the following is an effect of chronic alcohol consumption on the brain?
(A) Improved cognitive function and memory.
(B) Increased speed of nerve impulse transmission.
(C) Brain tissue shrinkage and impairment.
(D) No significant long-term effects.

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150. Read the following statements and select the correct option.
Statement I : Health-related physical fitness is primarily concerned with athletic skills like speed and agility.
Statement II : The components of health-related physical fitness, such as cardiorespiratory endurance and flexibility, are essential for general health and wellness.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.

88. A person wants to lose weight. They decide to reduce their daily calorie intake by 500 kcal and start a moderate exercise program that burns an additional 300 kcal per day. This strategy focuses on:
(A) Creating a negative energy balance.
(B) Creating a positive energy balance.
(C) Maintaining energy balance.
(D) Ignoring the role of energy balance.

89. A sprain is a common sports injury that involves the stretching or tearing of:
(A) Muscles
(B) Bones
(C) Ligaments
(D) Skin

90. The acronym RICE is a first-aid principle for treating many common sports injuries like sprains and strains. The 'C' in RICE stands for:
(A) Care
(B) Compression
(C) Circulation
(D) Call

91. The "Greenhouse Effect," which contributes to global warming, is intensified by the accumulation of gases like carbon dioxide in the atmosphere. This is primarily a consequence of:
(A) Water pollution
(B) Sound pollution
(C) Soil pollution
(D) Air pollution

92. Match the vitamin with its primary food source.
List I : (Vitamin)
P. Vitamin A
Q. Vitamin C
R. Vitamin D
S. Vitamin K
List II : (Primary Food Source)
1. Sunlight, Fortified Milk
2. Green leafy vegetables
3. Carrots, Sweet Potatoes
4. Citrus fruits, Bell peppers
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-4, R-1, S-2
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-3, R-1, S-4

93. The use of nutritional supplements is most appropriate in which of the following scenarios?
(A) To replace all meals for convenience.
(B) To gain a competitive edge in sports without proper training.
(C) When a person is diagnosed with a specific deficiency, like iron-deficiency anemia.
(D) To counteract the effects of a consistently poor diet.

94. What is the primary reason smoking is detrimental to cardiovascular health?
(A) It increases the oxygen-carrying capacity of the blood.
(B) It cleanses the arteries of cholesterol buildup.
(C) It lowers the heart rate to dangerously low levels.
(D) It damages blood vessels and raises blood pressure.

95. Read the following statements and select the correct option.
Statement I : The principles of health education state that learning is most effective when it is passive and lecture-based.
Statement II : Participation, group discussion, and problem-solving are considered effective methods in health education as they actively involve the learner.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

96. Which of the following is an example of the environment's role in achieving health?
(A) Inherited high cholesterol risks.
(B) Access to safe parks and clean water.
(C) An individual's inherited eye color.
(D) Family history of genetic disorders.

97. An important aspect of the 'School Health Programme' is the maintenance of health records for each student. The primary purpose of these records is to:
(A) Rank students based on their physical fitness.
(B) Track growth and immunization status.
(C) Share private information with other students.

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(C) 1, 3, and 4 only
(D) 1, 2, and 4 only

119. A major source of water pollution is 'runoff' from agricultural fields, which often contains:
(A) Plastic waste
(B) Heavy metals from factories
(C) Pesticides and fertilizers
(D) Radioactive materials

120. Which class of nutrients includes both soluble and insoluble types and is crucial for digestive health?
(A) Fats
(B) Proteins
(C) Vitamins
(D) Fiber

121. Kwashiorkor is a severe form of malnutrition caused by:
(A) A deficiency of Vitamin A.
(B) An excessive intake of carbohydrates.
(C) A severe deficiency of dietary protein.
(D) A lack of dietary fat.

122. The prevention of drug abuse often involves strategies aimed at strengthening:
(A) Access to illegal substances.
(B) Protective factors like family bonds.
(C) Peer pressure to use drugs.
(D) The glorification of drug use in media.

123. Which of the following represents the 'social' dimension of health?
(A) A person's body mass index (BMI).
(B) An individual's ability to cope with daily stress.
(C) The person's blood pressure reading.
(D) The quality of person-to-person interactions.

124. 'health instructions' in a community health program should primarily be:
(A) Culturally sensitive and relevant to needs.
(B) Delivered in a highly technical and academic language.
(C) Focused only on rare and exotic diseases.
(D) The same for every community, regardless of context.

125. The Indian Red Cross Society is an example of a:
(A) Government agency under the Ministry of Health.
(B) United Nations specialized agency.
(C) Private, voluntary health-promoting agency.
(D) For-profit private hospital chain.

126. Personal hygiene is a critical element in preventing the spread of communicable diseases because:
(A) It guarantees 100% protection from all illnesses.
(B) It helps to remove or destroy pathogens.
(C) It is a substitute for all vaccines.
(D) It only affects an individual's appearance.

127. Which of the following is the most accurate statement regarding sedentary lifestyle diseases?
(A) They are contagious and can be spread through coughing.
(B) They only affect elderly individuals.
(C) They can be cured completely with a single dose of medicine.
(D) They are primarily caused by physical inactivity.

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128. From a physiological standpoint, how does exercise contribute to weight control?
(A) It increases total daily energy expenditure.
(B) It decreases the body's metabolic rate.
(C) It adds fat to the body for insulation.
(D) It makes the person less hungry, reducing intake.

129. A 'strain' is a common sports injury resulting from the overstretching or tearing of:
(A) A ligament
(B) A bone
(C) A muscle or tendon
(D) A bursa

130. A person has a small object (like a speck of dust) in their eye. What is the recommended first-aid step?
(A) Rub the eye vigorously.
(B) Flush the eye with clean water or saline.
(C) Try to remove it with a sharp object like a toothpick.
(D) Keep the eye tightly closed for an hour.

131. The depletion of the ozone layer, which protects life on Earth from excessive UV radiation, is caused by certain air pollutants, most notably:

system depressant effects of drugs like sedatives or alcohol?
(A) Respiratory and nervous systems
(B) Digestive system
(C) Endocrine system
(D) Skeletal system

109. Which of the following is NOT an objective of health?
(A) To live a long life free from disease and disability.
(B) To adapt and self-manage in the face of physical and social challenges.
(C) To achieve maximum wealth regardless of well-being.
(D) To maintain a state of positive physical and mental well-being.

110. The principle of 'Participation' in health education implies that:
(A) The community members are actively involved in planning and implementing health programs.
(B) The health educator does all the talking.
(C) People are forced to attend health sessions.
(D) Only the community leaders are allowed to speak.

111. Which component of health-related fitness refers to the ability of the heart, lungs, and blood vessels to supply oxygen to working muscles during prolonged physical activity?
(A) Flexibility
(B) Muscular strength
(C) Muscular endurance
(D) Cardiorespiratory endurance

112. The Central Health Education Bureau (CHEB) in India is an example of a:
(A) Private, international charity organization.
(B) National, government health-promoting agency.
(C) State-level private hospital.
(D) United Nations specialized agency.

113. Arrange the typical progression of a communicable disease within an individual in the correct chronological order.
1. Period of convalescence and recovery.
2. Incubation period (entry of organism to first symptom).
3. Prodromal period (early, non-specific symptoms).
4. Clinical period (characteristic signs and symptoms).

(A) 2, 3, 4, 1
(B) 1, 2, 3, 4
(C) 2, 4, 3, 1
(D) 3, 2, 4, 1

114. A key preventive strategy for psychosomatic disorders is:
(A) Ignoring emotional and mental stress.
(B) Avoiding all social interaction.
(C) Taking painkillers to mask the symptoms.
(D) Developing effective stress management techniques.

115. A significant health risk associated with central obesity (excess fat around the abdomen) is:
(A) Increased risk of cardiovascular disease.
(B) Improved athletic performance.
(C) A lower risk of developing hypertension.
(D) Enhanced flexibility and joint health.

116. When combining exercise and dieting for weight control, why is it important to maintain an adequate protein intake?
(A) To ensure fat is the only substance lost.
(B) To help preserve lean muscle mass.
(C) To eliminate the need to drink water.
(D) Because protein has no calories.

117. What is the immediate first aid for a suspected fracture of a limb?
(A) Try to straighten the limb back into its normal position.
(B) Immobilize the limb as it was found.
(C) Encourage the person to walk on it to test for severity.
(D) Apply a hot compress to the area.

118. Consider the following statements regarding first aid:
1. To preserve life.
2. To provide a definitive medical diagnosis.
3. To prevent the condition from worsening.
4. To promote recovery.

Which of the above statements represent the key objectives of first aid?
(A) 1, 2, and 3 only
(B) 2, 3, and 4 only

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(D) Decide on academic promotions.

98. Consider the following actions related to hygiene:
A. Brushing teeth at least twice a day.
B. Washing hands with soap and water frequently.
C. Sharing personal items like towels and toothbrushes.
D. Bathing or showering regularly.
E. Wearing dirty clothes repeatedly.
Which of the above actions contribute to good personal hygiene?
(A) A, B, and C only
(B) A, B, and D only
(C) C, D, and E only
(D) A, C, and E only

99. A disease that can be transmitted from one person to another, either directly or indirectly, is called:
(A) A hereditary disease
(B) A degenerative disease
(C) A communicable disease
(D) A psychosomatic disorder

100. One of the main symptoms of diabetes, a sedentary lifestyle disease, is:
(A) Persistent low blood sugar.
(B) A constant feeling of being cold.
(C) Rapid and unexplained weight gain.
(D) Excessive thirst and frequent urination.

101. Read the following assertion and reason and select the correct option.
Assertion (A) : Obesity is a significant risk factor for the development of Type 2 diabetes.
Reason (R) : Excess body fat, particularly abdominal fat, can lead to insulin resistance, a condition where the body's cells do not respond effectively to insulin.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

102. When dieting for weight control, it is generally advised to:
(A) Eliminate entire food groups, such as all carbohydrates or all fats.
(B) Focus on a balanced, calorie-controlled diet that is sustainable long-term.
(C) Skip breakfast to save calories for later in the day.
(D) Reduce water intake to lose water weight quickly.

103. In first aid, what is the primary danger associated with an open fracture compared to a closed fracture?
(A) It is more painful.
(B) It is more difficult to see.
(C) The risk of infection is much higher.
(D) It heals more quickly.

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104. Which of the following is a common symptom of shock?
(A) Flushed, hot, and dry skin.
(B) Strong, regular pulse.
(C) Deep, slow breathing.
(D) Pale, cold, and clammy skin.

105. Eutrophication of water bodies, characterized by excessive algae growth, is primarily caused by:
(A) Oil spills.
(B) Heavy metal contamination.
(C) Nutrient pollution from fertilizers and sewage.
(D) Thermal pollution from power plants.

106. Vitamins and minerals are known as 'micronutrients' because:
(A) They are required by the body in very small amounts.
(B) They are only found in microscopic organisms.
(C) They are less important than macronutrients.
(D) They provide a micro amount of energy.

107. Which of the following is the best example of a nutritional supplement?
(A) A whole apple.
(B) A glass of milk.
(C) A grilled chicken breast.
(D) An iron tablet.

108. Which body system is most directly and immediately affected by the central nervous

(A) Carbon dioxide (CO_2)
(B) Sulfur dioxide (SO_2)
(C) Methane (CH4)
(D) Chlorofluorocarbons (CFCs)

132. Match the mineral with its primary function in the body.
List I : (Mineral)
P. Calcium
Q. Iron
R. Iodine
S. Sodium
List II : (Primary Function)
1. Component of hemoglobin, oxygen transport
2. Regulation of thyroid hormones
3. Bone and teeth formation
4. Fluid balance, nerve impulse transmission
Codes:
(A) P-3, Q-1, R-2, S-4
(B) P-1, Q-3, R-4, S-2
(C) P-3, Q-2, R-1, S-4
(D) P-4, Q-1, R-2, S-3

133. Which group of individuals might be medically advised to take nutritional supplements?
(A) Healthy adults who eat a varied and balanced diet.
(B) Athletes who want to avoid proper training.
(C) Pregnant women with higher nutrient needs.
(D) Anyone trying to lose weight quickly.

134. Read the following assertion and reason and select the correct option.
Assertion (A) : Secondhand smoke, also known as passive smoking, is harmless to non-smokers.
Reason (R) : The smoke inhaled by non-smokers contains the same harmful and carcinogenic chemicals that the smoker inhales.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

135. Which of the following best illustrates the role of genetics in health?
(A) Having a predisposition to sickle cell anemia.
(B) Developing lung cancer due to a long history of smoking.
(C) Acquiring a foodborne illness from contaminated food.
(D) Suffering from hearing loss due to prolonged exposure to loud noise.

136. Consider the following activities within a community health program:
A. Conducting health surveys and questionnaires.
B. Screening for common conditions like hypertension and diabetes.
C. Analyzing community health statistics (e.g., mortality, morbidity rates).
D. Ignoring the environmental conditions of the community.
E. Performing physical examinations on individuals.
Which of the above actions may be involved in a health appraisal?
(A) A, B, C, and D only
(B) B, C, D, and E only
(C) A, B, C, and E only
(D) A, C, D, and E only

137. Which of the following is an example of a water-borne communicable disease?
(A) Influenza
(B) AIDS
(C) Cholera
(D) Tetanus

138. Which of the following is NOT a psychosomatic disorder?
(A) Tension headaches
(B) A broken leg from a sports accident
(C) Some forms of hypertension
(D) Irritable Bowel Syndrome (IBS)

139. In first aid for bleeding, applying direct pressure to the wound helps to:
(A) Clean the wound of bacteria.
(B) Increase blood flow to the area.
(C) Numb the area to reduce pain.
(D) Promote clotting and stop blood flow.

140. Which of the following is a long-term preventive measure against pollution?
(A) Transitioning to renewable energy sources.
(B) Wearing a mask on a day with poor air

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76. Which of the following food groups is the best source of dietary fiber?
(A) Dairy products
(B) Fruits, vegetables, and whole grains
(C) Meats and poultry
(D) Fats and oils

77. Which vitamin, found in citrus fruits, is essential for preventing scurvy?
(A) Vitamin A
(B) Vitamin D
(C) Vitamin C
(D) Vitamin K

78. The term 'withdrawal symptoms' refers to:
(A) Pleasure felt when taking a drug.
(B) Process of obtaining prescriptions.
(C) Social acceptance of drug use.
(D) Distress felt when stopping drug use.

79. Which health concept emphasizes that health is not merely the absence of disease but a state of complete physical, mental, and social well-being?
(A) The biomedical model
(B) Germ theory of disease
(C) Holistic concept of health
(D) Epidemiological triad

80. What is the primary role of a 'health appraisal' in a school setting?
(A) Identifying students for elite sports teams.
(B) Monitoring student health and identifying problems.
(C) Determining the academic grades of students.
(D) Punishing students for being unhealthy.

81. Which of the following is a key symptom of a heart attack?
(A) A sudden, severe headache.
(B) Persistent chest pain or discomfort that may spread to the arm, neck, or jaw.
(C) A rash covering the entire body.
(D) Inability to move a leg.

82. Read the following assertion and reason and select the correct option.
Assertion (A) : Providing first aid for common sports injuries is a crucial skill for coaches and physical education teachers.
Reason (R) : Immediate and appropriate first aid can reduce the severity of an injury, alleviate pain, and prevent further damage.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

83. The presence of E. coli bacteria in a water source is an indicator of:
(A) High mineral content.
(B) Acid rain effects.
(C) Fecal contamination.
(D) High levels of radiation.

84. In the context of nutrition, fats are important because they:
(A) Build the primary muscle fibers.
(B) Aid digestion of dietary fiber.
(C) Provide a primary source of protein.
(D) Provide energy and absorb vitamins.

85. Which of the following is NOT a component of health-related physical fitness?
(A) Body composition
(B) Flexibility
(C) Power
(D) Muscular endurance

86. Which of the following is a communicable disease?
(A) Type 2 Diabetes
(B) Tuberculosis
(C) Hypertension
(D) Asthma

87. Which of the following is a correct statement about the prevention of sedentary lifestyle diseases?
(A) It requires complete avoidance of all fats in the diet.
(B) It is only possible through expensive medical procedures.
(C) It depends solely on an individual's genetic makeup.
(D) It can be achieved through regular physical activity and a balanced diet.

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(D) Statement I is false, but Statement II is true.

151. Which of the following is the best example of a national, government health-promoting agency in India?
(A) Ministry of Health and Family Welfare
(B) The World Bank
(C) The Kasturba Gandhi National Memorial Trust
(D) The International Committee of the Red Cross

152. Consider the following characteristics:
1. Adequate lighting and ventilation in classrooms.
2. Overcrowded classrooms and hallways.
3. Safe drinking water and clean toilets.
4. A supportive and positive psycho-social climate.

Which of the above represent characteristics of a healthful school environment?
(A) 1, 2, and 3
(B) 1, 3, and 4
(C) 2, 3, and 4
(D) 1, 2, and 4

153. A person experiences a sudden onset of weakness on one side of the face, arm, and leg, along with difficulty speaking. These are hallmark symptoms of:
(A) A seizure
(B) A diabetic emergency
(C) A stroke
(D) An asthma attack

154. What is the fundamental difference between a communicable and a non-communicable disease?
(A) Communicable diseases are curable, while non-communicable diseases are not.
(B) Pathogen transmission vs. non-transmissible cause.
(C) Communicable diseases affect only children, while non-communicable diseases affect only adults.
(D) Communicable diseases are less severe than non-communicable diseases.

155. Which of the following correctly pairs a common sports injury with its definition?
(A) Sprain - Tearing of a muscle or tendon.
(B) Strain - Injury to a ligament.
(C) Dislocation - Bone displacement from a joint.
(D) Fracture - Bruising of the skin.

156. In the case of an ingested non-corrosive poison in a conscious adult, when might inducing vomiting be recommended by a poison control center?
(A) If the person is having a seizure.
(B) If the poison was swallowed more than 12 hours ago.
(C) If the person swallowed a strong acid or alkali.
(D) If the ingestion was recent and alert.

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157. The primary health concern related to radiation pollution from nuclear accidents is an increased risk of:
(A) Asthma
(B) Hearing loss
(C) Cancer and genetic mutations
(D) Type 1 diabetes

158. Water-soluble vitamins, such as B-complex vitamins and Vitamin C, have which characteristic?
(A) They are not easily destroyed by cooking.
(B) Regular intake is needed as they are excreted.
(C) They are stored in the body's fatty tissues for a long time.
(D) They are only found in animal products.

159. A "rehabilitation" program for substance abuse is designed to:
(A) Provide a safe and supervised environment for detoxification.
(B) Educate the public about the dangers of drugs.
(C) Punish the user for their addiction.
(D) Foster productive living without drugs.

160. What is a key objective of a community health programme?
(A) Improve community health via prevention and care.
(B) To maximize profits for healthcare providers.
(C) To focus exclusively on treating the wealthiest members of the community.

(D) To conduct academic research with no practical application.

161. Read the following assertion and reason and select the correct option.
Assertion (A) : School health services, including regular health check-ups, are an essential part of the overall school health programme.
Reason (R) : Early detection and referral for treatment of health problems can prevent more serious conditions and improve a child's ability to learn.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

162. How does immunization contribute to "herd immunity" in a community?
(A) By making every single person immune to all diseases.
(B) Reduced disease spread protects the unvaccinated.
(C) By increasing the number of susceptible individuals.
(D) By isolating sick individuals from the rest of the community.

163. The role of dieting in weight control is primarily to:
(A) Increase the body's metabolic rate.
(B) Build muscle mass.
(C) Create a deficit by reducing energy intake.
(D) Allow for unlimited consumption of "healthy" foods.

164. What is the main principle behind first aid for a second-degree burn with intact blisters?
(A) Puncture the blisters immediately to drain the fluid.
(B) Apply butter or grease to soothe the pain.
(C) Scrub the area with soap and water.
(D) Cool with water and apply a loose dressing.

165. The presence of high levels of Particulate Matter (PM2.5) in the air is a major health concern because these particles can:
(A) Improve visibility and air clarity.
(B) Provide essential nutrients when inhaled.
(C) Penetrate lungs and enter the bloodstream.
(D) Protect the respiratory system from infection.

166. A person consuming a diet severely lacking in iodine is at high risk of developing:
(A) Scurvy
(B) Goitre
(C) Anemia
(D) Rickets

167. Which of the following is a primary preventive measure against drug abuse?
(A) Long-term residential treatment for addiction.
(B) Methadone maintenance therapy for opioid addiction.
(C) Detoxification in a hospital setting.
(D) Risk education and developing refusal skills.

168. Which concept best describes a health education approach that respects the learners' own experiences and involves them in the learning process?
(A) Active learning
(B) Dogmatic instruction
(C) Passive reception
(D) Authoritarian teaching

169. Consider the following health problems:
A. Type 2 Diabetes
B. Hypertension (High Blood Pressure)
C. Certain types of cancer
D. Osteoarthritis, especially in the knees
E. Type 1 Diabetes
Which of the above are directly related to obesity?
(A) A, B, C, and D only
(B) B, C, D, and E only
(C) A, B, D, and E only
(D) A, C, and E only

170. Which of the following is a symptom of a communicable disease?
(A) Fever
(B) A genetic mutation
(C) High cholesterol
(D) A sprained ankle

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171. In case of a nosebleed, the correct first-aid posture is to:
(A) Tilt the head backward to prevent blood from dripping out.
(B) Lie down flat on your back.
(C) Blow the nose hard to clear any clots.
(D) Sit up, lean forward, and pinch the soft nose.

172. Carbon monoxide, a component of both air pollution and cigarette smoke, is dangerous because it:
(A) Causes genetic mutations.
(B) Binds to hemoglobin, causing oxygen deprivation.
(C) Destroys the ozone layer.
(D) Causes acid rain.

173. Malnutrition encompasses all of the following conditions EXCEPT:
(A) Undernutrition (e.g., kwashiorkor, marasmus).
(B) Micronutrient deficiencies (e.g., lack of iron or vitamin A).
(C) Optimal health from a balanced diet.
(D) Overweight and obesity.

174. A drug is defined as a chemical substance that, when taken into the body:
(A) Always provides essential nutrients.
(B) Alters the body's physical or mental function.
(C) Is always safe and has no side effects.
(D) Can only be obtained with a prescription.

175. The ability of a muscle or group of muscles to exert force repeatedly over time is known as:
(A) Muscular strength
(B) Flexibility
(C) Cardiorespiratory fitness
(D) Muscular endurance

176. Match the health agency with its primary role or type.
List I : (Agency)
P. WHO
Q. ICMR
R. Indian Red Cross Society
S. CHEB
List II : (Role/Type)
1. National government agency for health education
2. International agency for public health
3. National voluntary health agency
4. National government agency for biomedical research
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-4, R-3, S-1
(C) P-2, Q-3, R-4, S-1
(D) P-4, Q-1, R-2, S-3

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177. Which of the following best describes the cause of a psychosomatic disorder?
(A) A purely physical ailment with no connection to mental state.
(B) An imaginary illness with no real physical symptoms.
(C) Physical symptoms caused or worsened by emotion.
(D) A disease caused by a bacterial or viral infection.

178. What is the significance of the body mass index (BMI) in relation to body weight control?
(A) It is a direct measure of an individual's athletic ability.
(B) It screens weight status and identifies health risk.
(C) It provides a precise measurement of body fat percentage.
(D) It is a diagnostic tool for communicable diseases.

179. If you suspect someone has ingested poison, what is the most important first step?
(A) Immediately give them something to eat.
(B) Induce vomiting without seeking advice.
(C) Wait for an hour to see if symptoms develop.
(D) Contact a poison control center or EMS.

180. Which of the following is NOT a principle of first aid?
(A) Exceeding your specific level of medical training.
(B) To arrange for transport to a medical facility.
(C) To preserve life.
(D) To prevent the victim's condition from worsening.

181. What is a primary preventive measure against the health effects of sound pollution?
(A) Taking painkillers for headaches.

(B) Listening to music at a higher volume.
(C) Using ear protection in noisy environments.
(D) Undergoing surgery to repair hearing damage.

182. A deficiency of Niacin (Vitamin B3) leads to which disease, characterized by dermatitis, diarrhea, and dementia?
(A) Beriberi
(B) Pellagra
(C) Scurvy
(D) Rickets

183. The term 'Fetal Alcohol Syndrome' refers to:
(A) The withdrawal symptoms experienced by an alcoholic.
(B) The development of liver disease in adults.
(C) The high tolerance for alcohol developed by chronic drinkers.
(D) Birth defect patterns from maternal alcohol use.

184. The objective of "positive health" in the spectrum of health refers to:
(A) Optimal well-being and ability to face challenges.
(B) The mere absence of any detectable disease.
(C) The point just before death.
(D) The recovery phase after an illness.

185. Read the following assertion and reason and select the correct option.
Assertion (A) : In health education, it is important to provide opportunities for learners to practice new skills.
Reason (R) : Active practice and reinforcement help in the adoption and maintenance of new health behaviors.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

186. Which component of health-related fitness relates to the ratio of fat mass to fat-free mass in the body?
(A) Flexibility
(B) Body composition
(C) Cardiorespiratory endurance
(D) Muscular strength

187. A 'vector' in the context of communicable diseases is:
(A) The pathogen that causes the disease.
(B) The set of symptoms characteristic of the disease.
(C) An organism that transmits a pathogen between hosts.
(D) A vaccine used to prevent the disease.

188. Which of the following actions is a key part of personal hygiene to prevent foodborne illnesses?
(A) Tasting food to check if it has gone bad.
(B) Storing all foods at room temperature.
(C) Using the same cutting board for raw meat and vegetables without washing it.
(D) Thoroughly washing hands during food handling.

189. A stroke is a sedentary lifestyle disease that occurs due to:
(A) A viral infection of the lungs.
(B) An overproduction of insulin by the pancreas.
(C) Disrupted blood supply to the human brain.
(D) A bacterial infection of the stomach.

190. Why is a combination of exercise and dieting considered the "gold standard" for weight control?
(A) It produces the fastest possible weight loss, which is always the healthiest.
(B) It balances intake and expenditure to preserve muscle.
(C) Dieting alone is ineffective, and exercise alone is impossible to sustain.
(D) It allows individuals to continue eating unhealthy foods as long as they exercise.

191. A 'dislocation' at a joint is a serious injury that requires:
(A) Immediate relocation of the joint by the first aider on the scene.
(B) The application of a hot pack to reduce swelling.
(C) The person to move the joint to prevent it from getting stiff.
(D) Joint immobilization and prompt medical care.

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192. Which of the following is a symptom of severe dehydration, which can be a form of shock?
(A) Confusion, lethargy, and unconsciousness
(B) Copious urination
(C) Clear, moist skin
(D) Slow, strong pulse

193. Which statement about the effects of pollution on health is most accurate?
(A) Pollution only affects the health of plants and animals, not humans.
(B) The effects of pollution are always immediate and acute.
(C) Chronic diseases result from long-term low exposure.
(D) Only high-level industrial pollution is a threat to health; urban pollution is safe.

194. Consider the following:
1. Macronutrients (Carbohydrates, Proteins, Fats)
2. Micronutrients (Vitamins, Minerals)
3. Water
4. Artificial sweeteners

Which of the above are considered components of a balanced diet?
(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) 1, 2, 3, and 4

195. An individual who consistently consumes far fewer calories than their body needs is suffering from which form of malnutrition?
(A) Overnutrition
(B) A specific micronutrient toxicity
(C) Undernutrition
(D) A balanced deficiency

196. The effect of long-term heavy smoking on the lungs, such as emphysema, is best described as:
(A) A temporary inflammation that heals quickly.
(B) Permanent and irreversible destruction of lung tissue.
(C) An improvement in the lung's elasticity.
(D) A beneficial adaptation to airborne pollutants.

197. The first phase in a structured rehabilitation program for drug use is often:
(A) Job training
(B) Family therapy
(C) Long-term follow-up
(D) Detoxification

198. The ability to form and maintain satisfying interpersonal relationships is a key aspect of which dimension of health?
(A) Social
(B) Physical
(C) Mental
(D) Environmental

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199. A health education program that uses posters, pamphlets, and mass media to disseminate information is employing which principle?
(A) Participation
(B) Motivation
(C) Communication
(D) Reinforcement

200. The component of fitness that refers to the range of motion available at a joint is:
(A) Strength
(B) Flexibility
(C) Power
(D) Endurance

201. Which of the following is a primary function of a school health service?
(A) Teaching core academic subjects like mathematics and science.
(B) Organizing inter-school sports competitions.
(C) Providing emergency care and first aid for injury.
(D) Disciplining students for misbehavior.

202. Match the term related to communicable diseases with its correct definition.
List I : (Term)
P. Pathogen
Q. Host
R. Epidemic
S. Pandemic
List II : (Definition)
1. An organism in which a pathogen lives and multiplies.
2. A disease-causing microorganism.
3. An epidemic that has spread over a very wide area, such as a continent or the world.
4. The occurrence of a disease in a community

244. If an individual's energy intake is consistently equal to their energy expenditure, what will happen to their body weight?
(A) It will increase.
(B) It will decrease.
(C) It will fluctuate unpredictably.
(D) It will remain relatively stable.

245. When should a first aider call for emergency medical help for a burn?
(A) Only for small, first-degree burns.
(B) Never; all burns can be managed at home.
(C) For deep burns or those on the face and hands.
(D) Only if the person complains of pain.

246. Bio-magnification is a process related to pollution where:
(A) Pollutants are naturally broken down in the environment.
(B) Toxin concentrations rise up the food chain.
(C) Air pollutants become more visible.
(D) Sound becomes louder as it travels.

247. The most reliable way to ensure adequate intake of all essential nutrients is to:
(A) Take a variety of high-dose supplements.
(B) Follow the latest fad diet from a magazine.
(C) Eat only one type of "superfood."
(D) Consume a balanced and varied whole diet.

248. Which of the following is a common withdrawal symptom from caffeine, a widely used drug?
(A) Headache
(B) Euphoria
(C) Increased energy
(D) Improved concentration

249. Which of the following is NOT an objective of first aid?
(A) To preserve life
(B) To prevent further harm
(C) To perform surgery
(D) To promote recovery

250. Consider the following conditions:
1. Type 2 Diabetes
2. Coronary Heart Disease
3. Influenza
4. Postural problems and back pain

Which of the above can be considered sedentary lifestyle diseases?
(A) 1, 2, and 3
(B) 2, 3, and 4
(C) 1, 2, and 4
(D) 1, 3, and 4

Direction : Please read the following source carefully.

The concept of health extends far beyond the mere absence of disease or infirmity, encompassing a state of complete physical, mental, and social well-being. This holistic view is represented by the spectrum of health, a dynamic continuum ranging from positive health at one end, characterized by optimal functioning, to death at the other. Between these extremes lie various states, including better health, freedom from sickness, unrecognized sickness, mild sickness, severe sickness, and the terminal stage. Health education is a critical tool for moving individuals and communities towards the positive end of this spectrum. Its primary importance lies in fostering voluntary adaptations of behavior conducive to health. The principles governing effective health education are manifold and include establishing credibility, generating interest, encouraging active participation, and providing motivation. Furthermore, the information imparted must be comprehensible to the target audience, and the desired behaviors should be consistently reinforced. The ultimate objective is not merely to impart knowledge but to empower individuals to make informed decisions and take responsibility for their own health, thereby influencing their position on the health spectrum through conscious, self-directed action. This process bridges the gap between health information and health practice.

Based on the above source, attempt the following five questions.

251. According to the passage, the spectrum of health is best described as:
(A) a static classification of different diseases.
(B) a dynamic continuum representing varying degrees of well-being.
(C) a list of objectives for government health programs.
(D) a measurement of physical fitness levels only.

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(A) 1, 2, and 3 only
(B) 2, 3, and 4 only
(C) 1, 3, and 4 only
(D) 1, 2, and 4 only

213. Coronary Artery Disease, a common sedentary lifestyle disease, involves:
(A) The strengthening and widening of the arteries supplying blood to the heart.
(B) A bacterial infection of the heart valves.
(C) Artery narrowing, often due to atherosclerosis.
(D) A rapid, uncontrolled growth of heart muscle tissue.

214. From a health and wellness perspective, the ultimate goal of body weight control should be:
(A) To achieve the lowest possible body weight.
(B) To match the body weight of a celebrity or model.
(C) To lose weight as rapidly as possible using any means necessary.
(D) Attaining a healthy weight for height and build.

215. What is the main purpose of applying a splint in first aid for a suspected fracture?
(A) To prevent movement and reduce pain or damage.
(B) To set the bone correctly.
(C) To clean the wound if it is an open fracture.
(D) To reduce the body's temperature.

216. Which of the following is a primary safety measure to prevent food poisoning?
(A) Eating foods that have been left at room temperature for many hours.
(B) Cooking meats to the proper internal temperature.
(C) Using the same utensils for raw and cooked foods.
(D) Never washing fruits and vegetables.

217. Scurvy is a disease caused by a severe deficiency of:
(A) Protein
(B) Calcium
(C) Vitamin C
(D) Fat

218. In the context of substance abuse, 'tolerance' means:
(A) The user experiences unpleasant symptoms when they stop using the drug.
(B) Requiring larger doses to achieve the same effect.
(C) The user has a strong desire or compulsion to use the drug.
(D) The user is legally permitted to use the drug.

219. The WHO's definition of health as a state of "complete physical, mental, and social well-being" represents a shift from a purely:
(A) Holistic model to a biomedical model.
(B) Social model to a physical model.
(C) Environmental model to a genetic model.
(D) Biomedical model to a biopsychosocial model.

220. The ability to perform large-muscle, dynamic, moderate-to-high intensity exercise for prolonged periods is known as:
(A) Cardiorespiratory endurance
(B) Muscular strength
(C) Flexibility
(D) Body composition

221. Read the following statements and select the correct option.
Statement I : Health appraisal in a community health programme is a one-time activity that never needs to be repeated.
Statement II : Regular health appraisals are necessary to monitor changes in the community's health status and evaluate the effectiveness of interventions.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

222. An 'incubation period' of a communicable disease is the time between:
(A) The onset of symptoms and recovery.
(B) Pathogen exposure and the first symptom onset.
(C) The first symptoms and the appearance of characteristic signs.
(D) The end of the illness and the return to full health.

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or region in excess of normal expectancy.

Codes:

(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-1, R-4, S-3
(C) P-3, Q-4, R-1, S-2
(D) P-2, Q-3, R-4, S-1

203. A person suffering from 'burnout' due to chronic workplace stress may experience physical symptoms like fatigue and headaches. This is an example of a:
(A) Communicable disease
(B) Genetic disorder
(C) Nutritional deficiency
(D) Psychosomatic response

204. For an individual aiming to control their weight, keeping a food diary can be a useful tool primarily to:
(A) Magically reduce the number of calories in food.
(B) Share with friends on social media.
(C) Replace the need for physical exercise.
(D) Increase awareness of intake and eating habits.

205. In first aid, a 'laceration' refers to:
(A) A scrape or abrasion on the skin surface.
(B) A bruise under the skin.
(C) A jagged and irregular cut or tear of skin.
(D) A puncture wound from a sharp object.

206. In the event of a chemical spill, a crucial safety measure to prevent health effects from pollution is to:
(A) Move closer to get a better look at the spill.
(B) Evacuate the area and stay upwind from fumes.
(C) Attempt to clean the spill with water, regardless of the chemical.
(D) Ignore any official warnings or instructions.

207. Which of the following food items is a good source of complex carbohydrates?
(A) Table sugar
(B) Candy
(C) Soda
(D) Whole-wheat bread

208. Goitre, a swelling of the thyroid gland in the neck, is a visible sign of a deficiency of which mineral?
(A) Iodine
(B) Iron
(C) Calcium
(D) Zinc

209. Read the following assertion and reason and select the correct option.

Assertion (A) : The use of smokeless tobacco (like chewing tobacco) is a safe alternative to smoking cigarettes.

Reason (R) : Smokeless tobacco contains nicotine and many carcinogens, and is linked to cancers of the mouth, throat, and esophagus.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

210. The role of genetics in determining health is best described as:
(A) A definitive sentence to a certain health outcome.
(B) Creating a predisposition influenced by lifestyle.
(C) Having no influence on an individual's health.
(D) The sole factor responsible for all diseases.

211. Which of the following is an example of a private health-promoting agency operating at an international level?
(A) National Institute of Health (USA)
(B) Indian Council of Medical Research (India)
(C) Central Health Education Bureau (India)
(D) The Rockefeller Foundation (International Level)

212. Consider the following statements regarding immunization:
1. It is a form of primary prevention.
2. It works by creating active immunity.
3. It can help create herd immunity in a population.
4. It is only effective for treating diseases, not preventing them.

Which of the above statements are correct?

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3. A scrape of the superficial layer of the skin.
4. A deep, jagged cut through the skin.

Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-3, Q-2, R-4, S-1
(D) P-2, Q-1, R-4, S-3

234. In the context of body weight control, what is the 'Basal Metabolic Rate' (BMR)?
(A) The number of calories burned during intense exercise.
(B) The total number of calories a person should eat in a day.
(C) The rate at which fat is converted to muscle.
(D) Calorie expenditure while the body is at rest.

235. The immediate first aid for a third-degree burn (a severe burn that damages all layers of skin) is to:
(A) Use a cool dressing and seek medical help.
(B) Apply ice directly to the burn.
(C) Remove any clothing that is stuck to the burn.
(D) Apply ointment or butter to the burn.

236. A person is exhibiting confusion, sweating, and trembling. They are a known diabetic. They may be suffering from hypoglycemia (low blood sugar). If they are conscious and able to swallow, what is the appropriate first-aid?
(A) Give them a diet drink.
(B) Provide a sugary drink or glucose tablets.
(C) Give them an injection of insulin.
(D) Encourage them to exercise to raise their blood sugar.

237. Which of the following is a key safety measure to prevent health problems from radiation?
(A) Increasing time spent in direct, unprotected sunlight.
(B) Living as close as possible to a nuclear power plant.
(C) Limiting elective X-rays to necessity only.
(D) Ignoring safety protocols when handling radioactive materials.

238. Fat-soluble vitamins include:
(A) Vitamins B and C
(B) All B-complex vitamins
(C) Vitamin C and Vitamin K
(D) Vitamins A, D, E, and K

239. Which statement best describes the relationship between drug use and health?
(A) Drug abuse has severe negative health effects.
(B) All drug use is medically beneficial.
(C) Only illegal drugs are harmful; prescribed drugs are always safe.
(D) Drug use only affects the user and has no impact on family or community.

240. Read the following assertion and reason and select the correct option.
Assertion (A) : The physical environment of a school is a component of the school health programme.
Reason (R) : A safe and hygienic school environment, including clean water, sanitation, and adequate space, is essential for protecting and promoting student health.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

241. 'Health promotion' is best described as:
(A) The process of treating existing diseases.
(B) Enabling people to improve health control.
(C) The act of selling health insurance.
(D) The surgical removal of diseased organs.

242. A person who is 'asymptomatic' but carries a communicable disease is dangerous to public health because they:
(A) Can transmit pathogens unknowingly to others.
(B) Are extremely sick.
(C) Have no pathogens in their body.
(D) Are immune to the disease.

243. Which of these is a preventive measure for sedentary lifestyle diseases?
(A) Spending more hours watching television.
(B) Choosing a diet high in processed foods and saturated fats.
(C) Taking regular breaks to walk and stretch.
(D) Avoiding all forms of physical exertion.

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223. What is the primary role of exercise in the prevention of psychosomatic disorders?
(A) It directly cures the psychological root of the disorder.
(B) It has no effect on mental or emotional health.
(C) It makes the physical symptoms worse.
(D) Relieving stress and elevating the natural mood.

224. Which of the following would lead to weight gain?
(A) Consuming 2800 kcal and expending 2300 kcal.
(B) Consuming 2000 calories and expending 2500 calories daily.
(C) Consuming 2200 calories and expending 2200 calories daily.
(D) Consuming 1800 calories and expending 2300 calories daily.

225. A 'concussion' is a type of sports injury that affects the:
(A) Knee joint
(B) Ankle ligaments
(C) Brain
(D) Shoulder muscle

226. In first aid for an unconscious drowning victim who is not breathing, after removing them from the water, the priority is to:
(A) Try to drain water from the lungs by performing abdominal thrusts.
(B) Start CPR, beginning with chest compressions.
(C) Cover them with a warm blanket and wait for help.
(D) Slap them on the back.

227. Consider the following effects:
A. Hearing loss
B. Improved concentration
C. Sleep disturbances
D. Increased stress and hypertension
E. Enhanced immune function
Which of the above are potential effects of long-term exposure to sound pollution?
(A) A, B, and C only
(B) B, D, and E only
(C) A, C, and D only
(D) C, D, and E only

228. Which of the following is a function of water in the human body?
(A) Regulating temperature and nutrient transport.
(B) To provide a concentrated source of energy.
(C) To build and repair muscle tissue.
(D) To provide all necessary vitamins.

229. Marasmus is a severe form of malnutrition, particularly in infants, caused by a deficiency of:
(A) Vitamin C only
(B) Protein only
(C) Total calories and dietary protein intake.
(D) Iodine only

230. A key aspect of preventing relapse in a person recovering from alcoholism is:
(A) Encouraging them to visit bars to test their willpower.
(B) Joining support groups and using coping skills.
(C) Believing that one small drink is harmless.
(D) Isolating them from all friends and family.

231. The concept that health is influenced by a combination of biological, psychological, and social factors is known as the:
(A) Biomedical model
(B) Pathogenic model
(C) Environmental model
(D) Biopsychosocial model

232. An example of health instructions within a school health program would be:
(A) A vaccination drive organized at the school.
(B) A lesson on the food pyramid and balanced diets.
(C) The installation of water purifiers.
(D) The daily cleaning of classrooms.

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233. Match the type of common sports injury with its description.
List I : (Injury Type)
P. Abrasion
Q. Contusion
R. Laceration
S. Puncture
List II : (Description)
1. A wound made by a pointed object.
2. A bruise caused by a blow, crushing underlying muscle fibers and blood vessels.

252. What is identified as the primary importance of health education in the source?
(A) To encourage voluntary changes in behavior for better health.
(B) To enforce mandatory health regulations and policies.
(C) To diagnose and treat unrecognized sicknesses.
(D) To distribute medical supplies to communities.

253. Which of the following is NOT mentioned as a principle of effective health education?
(A) Credibility
(B) Participation
(C) Coercion
(D) Motivation

254. Based on the source, what can be inferred about the relationship between health knowledge and health practice?
(A) Possessing health knowledge automatically leads to healthy practices.
(B) Health practice is independent of the information an individual possesses.
(C) The gap between knowledge and practice is irrelevant to the health spectrum.
(D) Health education aims to connect information with practical application.

255. If a health educator ensures that a program is designed in the local dialect and uses culturally relevant examples, which principle of health education is being most directly applied?
(A) Reinforcement
(B) Participation
(C) Comprehension
(D) Credibility

Direction : Please read the following source carefully.

The achievement of health is a multifactorial process, profoundly influenced by the interplay between genetics and the environment. Genetics provides the foundational blueprint for an individual's health, determining predispositions to certain conditions and influencing inherent physiological traits. However, this genetic potential is expressed within an environmental context. The environment, encompassing physical, social, and economic factors, can either nurture or undermine health. For instance, access to clean water, nutritious food, and safe housing are environmental factors that support well-being, whereas exposure to pollutants or chronic stress can trigger or exacerbate genetically-linked vulnerabilities. Within this framework, health-related physical fitness emerges as a significant, modifiable determinant of health. It is not merely about athletic prowess but comprises components essential for daily life and disease prevention: cardiovascular endurance, muscular strength and endurance, flexibility, and body composition. While genetic factors can influence an individual's baseline fitness potential, it is the environment—including access to recreational facilities, cultural attitudes towards physical activity, and education—that largely dictates the extent to which this potential is realized. Therefore, achieving optimal health requires a holistic approach that acknowledges genetic predispositions while actively managing and improving environmental conditions and personal fitness.

Based on the above source, attempt the following five questions.

256. What is the primary relationship between genetics and environment in achieving health, as described in the passage?
(A) Genetic factors are solely responsible for an individual's health outcome.
(B) Genetic predispositions are expressed and influenced by environmental conditions.
(C) Environmental factors can completely override an individual's genetic blueprint.
(D) The environment and genetics are independent factors with no interaction.

257. Which of the following is explicitly mentioned as a component of health-related physical fitness?
(A) Athletic skill
(B) Reaction time
(C) Mental agility
(D) Body composition

258. The passage suggests that health-related physical fitness is primarily considered a:
(A) modifiable determinant of health.
(B) non-modifiable genetic trait.
(C) purely environmental condition.
(D) factor relevant only to athletes.

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259. Based on the source, one can be inferred that public health interventions should:
(A) focus exclusively on genetic screening to predict diseases.
(B) ignore genetic factors as they are unchangeable.
(C) prioritize managing environmental factors and promoting fitness.
(D) concentrate only on treating genetically-linked conditions.

260. A public health initiative that builds parks and safe walking trails in a neighborhood is primarily targeting which determinant of health discussed in the passage?
(A) The environmental context influencing physical activity.
(B) The genetic blueprint of the residents.
(C) The inherent physiological traits of the community.
(D) The diagnosis of genetically-linked vulnerabilities.

Direction : Please read the following source carefully.

Community and school health programmes represent structured efforts to safeguard and enhance public well-being at collective and institutional levels. A community health programme is a coordinated initiative aimed at protecting and improving the health of a specific population group. Its core components often include health appraisal and health instructions. Health appraisal involves the systematic assessment of the health status of individuals and the community through methods like screening, surveys, and medical examinations to identify health problems and needs. Following this, health instructions are provided, which constitutes the educational aspect designed to inform the community about health issues and guide them towards positive health behaviors. Similarly, a school health programme is a vital subset of community health, focusing on the well-being of students and the school community. It encompasses providing a safe and healthful school environment, delivering health services such as check-ups and first aid, and integrating health education into the curriculum. A fundamental aspect of the school health programme is the promotion of personal hygiene, which includes practices like handwashing, dental care, and cleanliness, as these are foundational behaviors for preventing the spread of infectious diseases and maintaining individual health within the collective school setting.

Based on the above source, attempt the following five questions.

261. According to the passage, what is the principal objective of a community health programme?
(A) To provide advanced surgical treatments to individuals.
(B) To manufacture and distribute pharmaceuticals.
(C) To exclusively fund private healthcare facilities.
(D) To protect and improve the health of a population group.

262. The process of using screening and medical examinations to identify health problems within a community is referred to as:
(A) health instruction.
(B) health appraisal.
(C) personal hygiene.
(D) community funding.

263. Which of the following best describes the scope of a school health programme as detailed in the source?
(A) Focusing solely on the academic performance of students.
(B) Limited to annual sports events and competitions.
(C) Comprising a safe environment, health services, and health education.
(D) Administering disciplinary actions for poor hygiene.

264. The passage emphasizes personal hygiene within a school health programme primarily as a means to:
(A) improve students' aesthetic appearance.
(B) prepare students for medical professions.
(C) fulfill a government mandate without a specific health goal.
(D) prevent infectious diseases and maintain individual health.

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265. What can be inferred from the relationship between health appraisal and health instruction in a community health programme?
(A) The findings from health appraisal inform the content of health instruction.
(B) Health instruction is only given to those who fail a health appraisal.
(C) Health appraisal is an outcome of effective health instruction.
(D) Health appraisal and health instruction are unrelated and independent activities.

Direction : Please read the following source carefully.

The promotion of public health is a collaborative endeavor involving a wide array of organizations at both national and international levels. These health-promoting agencies can be broadly categorized as government and private entities, each playing a distinct yet complementary role. International agencies, often with governmental representation, set global health standards, coordinate responses to pandemics, and provide technical and financial assistance to member countries. They are instrumental in tackling cross-border health issues and promoting universal health principles. At the national level, government agencies are typically responsible for formulating and implementing health policies, managing public health infrastructure, and running large-scale health campaigns and programmes, such as immunization drives and disease surveillance. Their authority is derived from legislation, and their reach is nationwide. Alongside these public bodies, private agencies make significant contributions. These can range from non-profit organizations and philanthropic foundations to corporate social responsibility initiatives. Private agencies often demonstrate flexibility and innovation, filling gaps left by the public sector, focusing on specific diseases or marginalized populations, and pioneering new models of healthcare delivery and health promotion. The synergy between these international, national, governmental, and private agencies is crucial for creating a comprehensive and effective public health ecosystem.

Based on the above source, attempt the following five questions.

266. According to the passage, what is a primary function of international health agencies?
(A) Enforcing domestic health laws within individual nations.
(B) Setting global health standards and coordinating pandemic responses.
(C) Exclusively funding private hospitals in developed countries.
(D) Managing the day-to-day operations of local clinics.

267. National government health agencies are typically characterized by their role in:
(A) operating independently of any legislative authority.
(B) formulating and implementing national health policies.
(C) focusing solely on international health diplomacy.
(D) providing funding exclusively to private organizations.

268. How are private health agencies distinguished from government agencies in the passage?
(A) They often exhibit flexibility and focus on specific populations.
(B) They are described as being more rigid and bureaucratic.
(C) They derive their authority directly from national legislation.
(D) They are solely responsible for running national immunization drives.

269. What can be inferred about the overall public health ecosystem described in the passage?
(A) Government agencies are sufficient to address all public health needs.
(B) Private agencies are gradually replacing all government functions.
(C) Effective public health relies on the cooperation of diverse types of agencies.
(D) International agencies have authority over national health policies.

270. A non-profit organization launching a targeted health awareness campaign for a remote, marginalized community is an example of the work typically done by which type of agency mentioned in the source?
(A) A national government agency
(B) An international government agency

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it improves these functions is incorrect. Chronic heavy drinking is associated with severe health risks, including liver cirrhosis and cardiovascular issues. It is important to understand these negative impacts to make informed health decisions.

25. (A) 3, 4, 1, 2
A community health programme follows a logical chronological sequence to be effective. It begins with assessing the specific health needs and problems of the target population. Based on this assessment, detailed health interventions are planned. These plans are then implemented through various activities and services. Finally, the programme is evaluated to determine its effectiveness and identify areas for improvement. This structured approach ensures that resources are used efficiently.

26. (A) Mental health
Mental health is a crucial dimension of overall well-being that involves an individual's emotional, psychological, and social state. It relates to the ability to think clearly, reason effectively, and manage the stresses of daily life. Good mental health allows a person to realize their potential, work productively, and contribute to their community. It is more than just the absence of illness; it is a positive state of resilience.

27. (D) Agility
Health-related physical fitness consists of components that improve overall health and reduce the risk of chronic diseases. These include cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Agility, on the other hand, is considered a skill-related fitness component. Skill-related components, such as speed, power, and coordination, are more associated with athletic performance in specific sports rather than general long-term health maintenance and disease prevention.

28. (A) Both A and R are true and R is the correct explanation of A.
Maintaining proper personal hygiene is an essential part of a school health programme because schools are environments where many people interact closely. Practices like frequent handwashing significantly reduce the spread of germs and communicable diseases among students and staff. By promoting these habits, schools protect the health of the student population and minimize absences. Therefore, hygiene education serves as a practical and effective tool for a healthy environment.

29. (C) Indian Council of Medical Research (ICMR)
The Indian Council of Medical Research is the premier government agency in India responsible for the formulation, coordination, and promotion of biomedical research. It plays a vital role in addressing the country's health challenges by conducting studies on communicable and non-communicable diseases, nutrition, and environmental health. Through its various institutes, the ICMR provides the scientific evidence needed to develop effective public health policies and medical interventions nationwide.

30. (A) Generating antibodies via the immune system.
Immunization works by introducing a harmless version of a pathogen into the body to stimulate the natural defense mechanism. The immune system recognizes these antigens and produces specific antibodies to fight them. This process creates a memory within the immune system, allowing it to respond rapidly if the person is exposed to the actual disease-causing organism in the future. It provides long-lasting protection without causing the illness itself.

31. (C) 1 and 3 only
Psychosomatic disorders are physical conditions that are either caused or significantly worsened by psychological factors like stress, anxiety, or emotional distress. Tension headaches and Irritable Bowel Syndrome are classic examples where the mind-body connection plays a major role in symptoms. In contrast, a simple fracture is a purely physical injury, and a bacterial infection is caused by a biological pathogen, although stress can weaken the immune response.

32. (B) A long-term positive energy imbalance.
Obesity is primarily caused by a long-term positive energy imbalance, where the number of calories consumed exceeds the number of calories expended through metabolism and physical activity. The body stores this excess energy as fat. While genetics and environment

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is prolonged inactivity, often coupled with poor dietary habits. The symptoms of these diseases often develop gradually and may include weight gain, high blood pressure, and elevated blood sugar levels. Prevention is key and centers on lifestyle modification. For psychosomatic disorders, prevention involves stress management techniques, counseling, and fostering emotional well-being. For sedentary lifestyle diseases, the cornerstone of prevention is the adoption of regular physical activity and a balanced diet. Addressing these conditions requires a shift in focus from merely treating symptoms to proactively managing the underlying causes rooted in lifestyle and psychological health.

Based on the above source, attempt the following five questions.

276. What is the defining characteristic of a psychosomatic disorder according to the passage?
(A) It is a physical ailment caused or worsened by mental factors.
(B) The symptoms are entirely imagined by the patient.
(C) It is caused exclusively by a pathogenic agent.
(D) It is transmitted from one person to another.

277. Sedentary lifestyle diseases are described as primarily arising from:
(A) chronic emotional stress.
(B) infection by a virus or bacteria.
(C) a genetic mutation.
(D) prolonged physical inactivity.

278. Which of the following is mentioned as a key preventive strategy for sedentary lifestyle diseases?
(A) Regular administration of vaccines.
(B) Adoption of regular physical activity.
(C) Complete avoidance of social interaction.
(D) Surgical intervention as a first resort.

279. The passage implies that the main difference between treating communicable diseases and treating sedentary lifestyle diseases is that the latter requires:
(A) a focus on immunization and sanitation.
(B) short-term antibiotic treatment.
(C) a greater emphasis on proactive lifestyle modification.
(D) isolation of the affected individual.

280. A person experiencing chronic headaches and stomach issues that doctors link to high levels of work-related anxiety is likely suffering from a:
(A) communicable disease.
(B) genetic abnormality.
(C) nutritional deficiency.
(D) psychosomatic disorder.

Direction : Please read the following source carefully.

Obesity, characterized by excessive body fat accumulation, poses significant health risks and is linked to a multitude of health problems, including hypertension, dyslipidemia, and type 2 diabetes. Consequently, effective body weight control holds profound significance for an individual's long-term health and quality of life. The management of body weight revolves around the principle of energy balance—the relationship between calories consumed and calories expended. Three primary strategies are employed for weight control: dieting, exercise, and a combination of both. Dieting, or the modification of caloric intake, aims to create a negative energy balance by reducing the number of calories consumed. While it can be effective for weight loss, relying solely on dieting may lead to the loss of lean muscle mass along with fat. Exercise increases the 'calories out' side of the energy balance equation, promoting fat loss while preserving or even increasing muscle mass. The role of exercise is crucial not only for weight loss but also for improving metabolic health and cardiovascular fitness. The most recommended and sustainable approach is the combination of exercise and dieting. This dual strategy optimizes fat loss, preserves lean body mass, and provides comprehensive health benefits that neither method can achieve as effectively on its own, leading to more successful long-term weight management.

Based on the above source, attempt the following five questions.

281. The fundamental principle of body weight control, as mentioned in the passage, is:
(A) the relationship between calories consumed and calories expended.
(B) the balance between vitamin intake and

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(C) A legislative health body
(D) A private agency

Direction : Please read the following source carefully.

Communicable diseases are illnesses caused by infectious agents or their toxic products that transmit from one person or animal to another, either directly or indirectly. Understanding their causes, symptoms, and prevention is fundamental to public health. The cause is always a specific pathogenic agent, such as a virus, bacterium, or parasite. The manifestation of disease is presented through a range of symptoms, which are indicators of infection and can vary from mild, such as fever and malaise, to severe and life-threatening. Prevention is a multi-pronged strategy. A primary method of prevention is breaking the chain of transmission through other means, such as ensuring safe drinking water, promoting hand hygiene, and vector control. These measures create a barrier between the infectious agent and a susceptible host. However, the most specific and effective preventive measure against many communicable diseases is immunization. Immunization works by introducing a vaccine into the body, which stimulates the immune system to produce antibodies and develop memory cells against a specific pathogen. This creates a state of immunity without causing the disease itself, providing long-term protection for the individual and contributing to community immunity, or 'herd immunity,' when a significant portion of a population is vaccinated, thereby reducing the overall spread of the disease.

Based on the above source, attempt the following five questions.

271. What is the definitive cause of a communicable disease as stated in the passage?
(A) A genetic predisposition.
(B) An unhealthy lifestyle.
(C) A specific pathogenic agent.
(D) A psychosomatic disorder.

272. The passage identifies immunization as a preventive measure that functions by:
(A) providing a physical barrier between the host and the environment.
(B) stimulating the immune system to create immunity without causing the disease.
(C) immediately destroying all pathogens present in the body.
(D) altering the body's genetic code to resist all infections.

273. Which of the following is an example of "prevention through other means" as described in the source?
(A) Administering a vaccine.
(B) Undergoing antibody therapy.
(C) Prescribing antibiotics after infection.
(D) Promoting regular hand hygiene.

274. Based on the passage, what can be inferred about the role of immunization in community health?
(A) It can help protect the entire community by reducing disease spread.
(B) It only protects the individual who receives the vaccine.
(C) It is less effective than general hygiene measures.
(D) It is primarily used to treat symptoms after they appear.

275. A public health campaign focused on mosquito net distribution to prevent malaria is an example of which preventive strategy mentioned in the text?
(A) Immunization
(B) Symptom management
(C) Vector control
(D) Pathogen identification

Direction : Please read the following source carefully.

The modern era is characterized by a rising prevalence of psychosomatic disorders and sedentary lifestyle diseases, which are distinct from communicable illnesses. Psychosomatic disorders are physical ailments that are believed to be caused or significantly aggravated by mental and emotional factors, such as stress, anxiety, and internal conflict. The symptoms are real physical manifestations, not imagined, and can affect various body systems. Sedentary lifestyle diseases, on the other hand, are a cluster of chronic conditions that arise primarily from a lack of physical activity. Common examples include type 2 diabetes, cardiovascular disease, and certain forms of cancer. The primary cause

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289. In the event of an electric shock, what is the most crucial initial step for a first-aider?
(A) Pouring water on the victim.
(B) Immediately touching the victim to check for a pulse.
(C) Elevating the victim's legs.
(D) Safely disconnecting the source of electricity.

290. The passage suggests that first-aid for a sprain, a common sports injury, should involve:
(A) a combination of rest, ice, compression, and elevation.
(B) immediate application of a heat pack.
(C) encouraging the person to continue the activity.
(D) administering rescue breaths and checking circulation.

Direction : Please read the following source carefully.

Environmental pollution, defined as the introduction of harmful contaminants into the natural environment, presents a significant threat to human health. It can be categorized based on the environmental medium it affects, with major types including air, water, sound, and radiation pollution. Air pollution, caused by emissions from industries, vehicles, and burning of fossil fuels, is linked to respiratory diseases, cardiovascular problems, and cancer. Water pollution, resulting from the discharge of industrial effluents, sewage, and agricultural runoff into water bodies, can cause infectious diseases like cholera and typhoid, as well as chronic health issues from chemical contaminants. Sound pollution, or excessive noise from traffic, industries, and urban life, contributes to stress, sleep disturbances, hearing loss, and hypertension. Radiation pollution, from nuclear sources or medical equipment, can cause cellular damage, leading to cancer and genetic mutations. The effects of pollution on health are extensive and damaging. Therefore, preventive and safety measures are crucial. These include implementing stricter emission standards for industries and vehicles, developing robust water treatment systems, creating green zones to buffer against noise, and enforcing stringent safety protocols for handling radioactive materials. Personal safety measures, such as using air purifiers, drinking boiled or filtered water, and using hearing protection in noisy environments, also play a vital role in mitigating exposure.

Based on the above source, attempt the following five questions.

291. Which type of pollution is explicitly linked to health effects such as stress, sleep disturbances, and hypertension in the passage?
(A) Air pollution
(B) Water pollution
(C) Sound pollution
(D) Radiation pollution

292. According to the source, what is a primary cause of water pollution?
(A) The discharge of sewage and industrial effluents.
(B) The burning of fossil fuels.
(C) Excessive noise from city traffic.
(D) The improper handling of medical equipment.

293. The passage suggests that radiation pollution can lead to which of the following health effects?
(A) Infectious diseases like cholera.
(B) Immediate hearing loss.
(C) Temporary sleep disturbances.
(D) Cellular damage and genetic mutations.

294. Which of the following is described as a preventive measure against air pollution?
(A) Enforcing safety protocols for radioactive materials.
(B) Implementing stricter emission standards for vehicles.
(C) Developing robust water treatment systems.
(D) Creating buffer zones against industrial noise.

295. Based on the passage, what can be inferred about protecting public health from pollution?
(A) Personal safety measures alone are sufficient to solve the problem.
(B) Pollution affects the environment but has a minimal impact on human health.
(C) A combination of governmental regulation and individual action is necessary.
(D) Only radiation pollution poses a serious long-term health risk.

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Direction : Please read the following source carefully.

Nutrition is a cornerstone of health, centered on

the concept of a balanced diet, which provides the body with essential nutrients for growth, maintenance, and energy. The components of a balanced diet include macronutrients (carbohydrates, proteins, fats) and micronutrients (vitamins, minerals), along with water and fiber. An inadequate intake of these components leads to nutritional deficiencies, which can manifest as specific diseases or general impairment of health. Malnutrition is a broader term that encompasses not only undernutrition (deficiencies) but also overnutrition (excess intake, often leading to obesity). In some cases, nutritional supplements may be used to correct specific deficiencies or support health under particular circumstances, but they are not a substitute for a balanced diet. The positive effects of good nutrition can be severely undermined by harmful lifestyle choices. The effects of smoking, alcohol, and drugs on health are profoundly negative. Smoking is a major cause of cancer, respiratory and cardiovascular diseases. Excessive alcohol consumption can lead to liver damage, cognitive impairment, and addiction. Drug abuse has devastating consequences on physical and mental health. Consequently, public health strategies must include prevention of substance abuse through education and policy, as well as rehabilitation for those affected, to help them overcome dependency and mitigate the long-term health damage.

Based on the above source, attempt the following five questions.

296. According to the passage, a balanced diet is essential for providing:
(A) only energy for physical activity.
(B) only micronutrients like vitamins and minerals.
(C) a substitute for nutritional supplements.
(D) essential nutrients for growth, maintenance, and energy.

297. How does the source define the term 'malnutrition'?
(A) As a state encompassing both undernutrition and overnutrition.
(B) As being synonymous with only undernutrition and deficiencies.
(C) As a condition resulting exclusively from the use of supplements.
(D) As the excessive consumption of vitamins and minerals.

298. The passage states that the effects of smoking on health primarily include:
(A) liver damage and cognitive impairment.
(B) cancer, respiratory, and cardiovascular diseases.
(C) immediate nutritional deficiencies.
(D) improved metabolic function.

299. What can be inferred about the role of nutritional supplements from the passage?
(A) They are intended to replace a healthy, balanced diet.
(B) They can be used to address specific deficiencies but not as a dietary substitute.
(C) They should be the primary source of all nutrients.
(D) They are the main cause of overnutrition and obesity.

300. The text suggests that a comprehensive public health approach to substance abuse should involve:
(A) both prevention efforts and rehabilitation services.
(B) focusing solely on punishing users.
(C) promoting smoking and drinking in moderation.
(D) replacing balanced diets with nutritional supplements.

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ANSWERS

1. (B) A dynamic continuum from wellness to death.
The spectrum of health illustrates that health is not a static state but a dynamic continuum. It ranges from optimal wellness and positive health at one end to illness and ultimately death at the other. Individuals move along this spectrum throughout their lives based on biological, environmental, and lifestyle factors. This concept emphasizes that health is a fluctuating condition requiring constant maintenance and intervention.

2. (A) Integrating existing learner experiences.
An effective principle of health education involves starting with what learners already know and experience. By building upon existing knowledge and cultural contexts, educators make information more relatable and easier to internalize. This approach fosters active participation and ensures that health messages are meaningful to the target audience. It moves beyond passive instruction, encouraging individuals to apply new concepts to their specific real-life situations.

3. (D) Statement I is false, but Statement II is true.
While genetics provides a blueprint for an individual's health potential, it does not determine outcomes entirely. Environmental factors like nutrition, sanitation, and exposure to pollutants play a critical role in how genetic traits are expressed. For example, a person with a genetic predisposition to a disease may avoid it through a healthy lifestyle. Conversely, poor environmental conditions can negatively impact even the strongest genetic health foundation.

4. (D) Assess the health status of the entire community.
A health appraisal is a systematic process used in community health programs to evaluate the overall health status of a population. It involves collecting data through surveys, screenings, and clinical examinations to identify prevalent health issues and needs. This assessment serves as the foundation for planning targeted interventions. By understanding the specific health profile of the community, resources can be allocated effectively to improve public wellness.

5. (C) WHO (World Health Organization)
The World Health Organization is the specialized agency of the United Nations responsible for international public health. Its primary mandate includes coordinating international responses to health emergencies, setting global health standards, and monitoring health trends. It works with member states to combat communicable diseases and improve healthcare systems worldwide. By providing leadership on critical health matters, it aims to ensure the highest possible level of health for all.

6. (B) Promote healthy student attitudes and habits.
Health instructions within a school health program are designed to provide students with the knowledge and skills necessary to make healthy choices. The primary goal is to foster positive attitudes toward wellness and establish lifelong healthy habits. This includes education on nutrition, physical activity, and disease prevention. By integrating these lessons into the curriculum, schools empower students to take responsibility for their own physical and mental well-being.

7. (C) 1 and 3 only
Personal hygiene encompasses a broad range of practices aimed at maintaining cleanliness to prevent disease and promote overall health. It is not limited to a single action like handwashing but includes dental care, regular bathing, and wearing clean clothes. These practices reduce the risk of infections and enhance social well-being. Effective hygiene is a fundamental component of public health, as it limits the transmission of pathogens between individuals.

8. (A) Droplet infection (e.g., coughing and sneezing).
Communicable respiratory diseases like the common cold and influenza are primarily spread through droplet infection. When an infected

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mineral intake.
(C) the ratio of protein to carbohydrates in the diet.
(D) the total hours of sleep versus hours of wakefulness.

282. What is a potential drawback of using dieting as the sole method for weight control?
(A) It only increases muscle mass.
(B) It can lead to the loss of lean muscle mass.
(C) It has no effect on caloric balance.
(D) It is ineffective for creating a negative energy balance.

283. According to the source, what is the primary role of exercise in weight control?
(A) To decrease the body's metabolic rate.
(B) To increase the number of calories expended.
(C) To exclusively reduce water weight.
(D) To suppress the appetite completely.

284. Why is the combination of exercise and dieting considered the most recommended approach for weight control?
(A) It optimizes fat loss while preserving lean body mass.
(B) It allows for an unlimited consumption of calories.
(C) It eliminates the need for any physical activity.
(D) It focuses only on short-term, weight loss.

285. The passage suggests that the significance of body weight control lies in its ability to:
(A) enhance athletic performance for competitive sports.
(B) conform to temporary aesthetic trends.
(C) reduce the risk of obesity-related health problems.
(D) eliminate the need for a balanced diet.

Direction : Please read the following source carefully.

First-aid is the immediate and temporary care given to a victim of an accident or sudden illness until the services of a physician can be obtained. Its primary objective is not to provide a definitive cure but to preserve life, prevent the condition from worsening, and promote recovery. The principles of first-aid guide the actions of the first responder, emphasizing rapid assessment and calm, methodical intervention. A key principle is to assess the situation for dangers before approaching the victim. Management priorities then follow a systematic approach, often focusing on airway, breathing, and circulation. Specific first-aid interventions are tailored to the injury. For shock, the aim is to improve circulation by laying the victim down and elevating their legs. In cases of severe bleeding, direct pressure on the wound is paramount. For burns, immediate cooling with cool running water is crucial. For poisoning, identifying the substance and contacting medical services is the priority, while for drowning, immediate rescue breaths are vital once the person is out of the water. In cases of electric shock, the first step is always to safely disconnect the power source before touching the victim. For common sports injuries like sprains, the principle of RICE (Rest, Ice, Compression, Elevation) is applied.

Based on the above source, attempt the following five questions.

286. What is stated as the primary objective of first-aid?
(A) To provide a definitive medical diagnosis and cure.
(B) To transport the victim to the hospital immediately.
(C) To administer prescription medication to the victim.
(D) To preserve life and prevent the condition from worsening.

287. According to the principles of first-aid, what is the first action a responder should take when encountering an accident scene?
(A) Immediately start chest compressions.
(B) Move the victim to a more comfortable position.
(C) Assess the situation for any potential dangers.
(D) Ask the victim for their medical history.

288. For which of the following situations is the application of direct pressure the most critical first-aid intervention mentioned in the passage?
(A) Shock
(B) Severe bleeding
(C) Drowning
(D) Poisoning

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step is to lay them down and elevate their feet. This position uses gravity to help blood flow from the lower extremities toward the heart and brain. It is important to keep the person warm and calm while waiting for emergency medical services to arrive.

17. (B) Chronic respiratory system diseases
Long-term exposure to high levels of air pollutants, such as particulate matter and nitrogen dioxide, is directly linked to chronic respiratory diseases. Inhaling these substances causes inflammation and damage to the lungs and airways, leading to conditions like asthma, bronchitis, and chronic obstructive pulmonary disease. These pollutants can also penetrate the bloodstream, affecting cardiovascular health. Reducing air pollution is essential for protecting the public from these debilitating health issues.

18. (B) B, C, and D only
Preventive measures against water pollution focus on stopping contaminants from entering water bodies at the source. This includes treating sewage before discharge, banning industrial waste dumping, and using organic farming methods to minimize pesticide runoff. While boiling water makes it safe for consumption, it does not prevent the pollution of the water source itself. Similarly, increasing plastic bottle use is not a preventive measure and can lead to environmental contamination.

19. (C) All essential nutrients in proper ratios.
A balanced diet provides the body with all the essential nutrients it needs to function correctly. This includes macronutrients like carbohydrates, proteins, and fats, as well as micronutrients like vitamins and minerals, all consumed in the appropriate proportions. No single food group should be overemphasized. Maintaining such a diet supports growth, repairs tissues, provides energy, and strengthens the immune system, thereby preventing various nutritional deficiencies and chronic health conditions.

20. (D) Rickets
Rickets is a skeletal disorder primarily caused by a severe and prolonged deficiency of Vitamin D in children. Vitamin D is essential for the body to absorb calcium and phosphorus, which are necessary for building strong bones. Without it, the bones become soft and weak, leading to deformities like bowed legs or a curved spine. Ensuring adequate exposure to sunlight and consuming Vitamin D-fortified foods are critical preventive measures.

21. (C) Imbalanced intake of specific nutrients.
Malnutrition is a broad term that refers to an imbalanced intake of energy and nutrients. It encompasses both undernutrition, characterized by deficiencies in essential vitamins and minerals, and overnutrition, which leads to overweight and obesity. It is not limited to being underweight or occurring only in low-income areas. Any condition where the diet does not provide the right amount of nutrients for optimal health is considered a form of malnutrition.

22. (B) Chronic Obstructive Pulmonary Disease (COPD)
Chronic smoking is the leading cause of Chronic Obstructive Pulmonary Disease, a progressive lung condition that makes it difficult to breathe. The harmful chemicals in tobacco smoke damage the airways and the tiny air sacs in the lungs, leading to chronic bronchitis and emphysema. This damage is often irreversible and significantly reduces lung capacity and quality of life. Smoking also increases the risk of heart disease and various cancers.

23. (D) Assisting in the reintegration into society.
The rehabilitation phase of recovery from drug addiction focuses on helping individuals return to a productive and healthy life within their community. While medical detoxification addresses immediate physical withdrawal, rehabilitation provides the psychological and social support needed for long-term sobriety. This involves counseling, vocational training, and developing coping strategies to prevent relapse. The ultimate goal is to empower individuals to function effectively in society without needing addictive substances.

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24. (A) Moderate alcohol consumption improves reaction time and coordination.
Alcohol acts as a depressant on the central nervous system, meaning it slows down brain activity. Even in moderate amounts, it impairs judgment, slows reaction times, and reduces physical coordination. Therefore, the claim that

person coughs or sneezes, tiny moisture droplets containing the virus are released into the air. These droplets can be inhaled by others nearby or settle on surfaces that people touch. Maintaining respiratory etiquette and frequent handwashing are essential preventive measures to curb the transmission of these common viral infections.

9. (C) Undergoing surgery for a diagnosed infection
Primary prevention focuses on preventing the onset of a disease before it occurs. Measures like immunization, hand washing, and maintaining personal hygiene are proactive steps to reduce risk factors. In contrast, undergoing surgery for a diagnosed infection is a form of tertiary prevention or treatment. It occurs after a disease has already developed and aims to manage the condition or prevent further complications rather than stopping its initial occurrence.

10. (A) Both A and R are true and R is the correct explanation of A.
Physical inactivity significantly contributes to the development of psychosomatic disorders. A sedentary lifestyle often leads to physiological imbalances, such as chronic stress and disrupted sleep patterns. These mental and emotional tensions can manifest as physical symptoms, including digestive issues or muscle pain. Therefore, the lack of regular exercise creates a cycle where psychological distress directly impacts physical health. Engaging in physical activity helps mitigate these risks by improving mental resilience.

11. (D) Obesity
Obesity is a major risk factor for several chronic lifestyle diseases, including hypertension, Type 2 diabetes, and coronary artery disease. Excessive body fat causes physiological changes such as insulin resistance and increased strain on the heart and blood vessels. Managing weight through diet and exercise is critical for preventing these conditions. Addressing obesity helps reduce the long-term burden of non-communicable diseases and improves overall life expectancy and quality of life.

12. (B) It helps manage various lifestyle diseases.
Maintaining a healthy body weight is vital for the prevention and management of various lifestyle-related diseases. Excess weight is strongly linked to conditions like heart disease, diabetes, and certain types of cancer. By controlling body weight, individuals can significantly reduce the strain on their cardiovascular system and improve metabolic function. This focus on weight management is not about aesthetics but about ensuring long-term physical health and reducing medical complications over time.

13. (C) Balancing moderate exercise with a stable diet.
The most effective long-term strategy for weight control involves achieving a sustainable energy balance. This is best accomplished by combining regular, moderate physical activity with a nutritious and stable diet. Short-term restrictive diets often lead to weight regain, while exercise without nutritional changes may not create the necessary caloric deficit. A balanced approach ensures that the body receives essential nutrients while maintaining a healthy weight through consistent and manageable lifestyle choices.

14. (A) P-4, Q-1, R-2, S-3
Immediate action in first aid depends on the specific emergency situation. Chemical burns in the eye require flushing with large amounts of water to dilute the substance. Severe bleeding is managed by applying direct pressure to the wound to promote clotting. An unconscious person who is not breathing requires cardiopulmonary resuscitation to maintain blood flow and oxygenation. Minor skin burns should be cooled with running water to alleviate pain.

15. (A) Prevent the condition from worsening.
One of the core objectives of first aid is to stabilize a victim and prevent their condition from deteriorating further before professional medical help arrives. This involves immediate actions such as stopping severe bleeding, ensuring an open airway, or immobilizing suspected fractures. By providing early intervention, first aiders can minimize the risk of complications and long-term damage. This principle focuses on immediate protection and safety rather than providing cures.

16. (B) Place them down with feet elevated.
When a person is in shock, the body's vital organs are not receiving enough blood flow. For a conscious victim, the most appropriate initial

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can influence weight, the fundamental driver is the consistent surplus of caloric intake relative to output. Managing this balance through diet and exercise is the most effective way to prevent obesity.

33. (B) Reducing calories via controlled intake.
In the context of weight control, dieting refers to the practice of regulating food intake to reduce the total number of calories consumed. The goal is to create an energy deficit, prompting the body to use stored fat for fuel. A healthy approach involves portion control and choosing nutrient-dense foods rather than completely eliminating food groups. Sustainable weight loss is achieved when calorie reduction is balanced with essential nutrients.

34. (A) Give them milk or water to drink to dilute the poison.
If a person has ingested a corrosive substance like a strong acid or alkali, the immediate priority is to dilute the chemical to minimize damage to the digestive tract. Providing small amounts of milk or water can help achieve this. It is critical not to induce vomiting, as the corrosive material would cause further burns as it passes back up. Professional medical help should be sought immediately for further treatment.

35. (C) Sound
The decibel is a unit used to measure the intensity or loudness of sound. In environmental health, tracking decibel levels is important because prolonged exposure to high-intensity noise can lead to permanent hearing damage and other health issues like increased stress and sleep disturbances. Authorities use decibel limits to regulate noise pollution in residential and industrial areas. Understanding sound intensity helps in implementing protective measures like soundproofing to safeguard hearing.

36. (D) Carbohydrates
Carbohydrates are the body's primary and most efficient source of energy. They are broken down into glucose, which provides the fuel needed for physical activity and vital organ functions. While fats and proteins can also be used for energy, carbohydrates are preferred by the brain and muscles during high-intensity work. A balanced diet should include a variety of complex carbohydrates, such as whole grains, to ensure a steady and reliable energy supply.

37. (C) Inadequate intake of essential nutrients.
Nutritional deficiencies occur when the body does not receive enough of the essential vitamins, minerals, or other nutrients required for healthy functioning. This is primarily caused by a diet that lacks variety or is insufficient in quantity. Factors like poor food choices, limited access to nutritious food, or underlying medical conditions can contribute. Over time, a lack of essential nutrients can lead to various diseases and impaired physical and mental development.

38. (B) Impaired coordination and slowed reaction time.
Alcohol is a depressant that quickly affects the central nervous system. It slows down the communication between the brain and the body, leading to impaired physical coordination and significantly slower reaction times. These immediate effects increase the risk of accidents and injuries. Additionally, alcohol impairs judgment and clear thinking. It does not improve focus or memory and can actually lower body temperature despite causing a temporary feeling of warmth.

39. (D) Foster voluntary health behavior change.
The fundamental objective of health education is to empower individuals with knowledge and skills that lead to voluntary changes in health-related behaviors. Unlike mandates, it relies on providing accurate information to help people make informed decisions about their well-being. By fostering a sense of responsibility and self-efficacy, health education aims to create lasting improvements in health. This approach respects individual autonomy while promoting practices that prevent disease and enhance quality of life.

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40. (A) Diabetes risk and high-sugar intake.
The interplay of genetics and environment is clearly seen in chronic conditions like Type 2 diabetes. An individual may inherit a genetic predisposition or higher risk for the disease. However, whether that risk manifests into actual illness is often determined by environmental factors, such as a diet high in sugar and a lack of physical activity. This illustrates how lifestyle

of ligaments. Ligaments are the tough bands of fibrous tissue that connect two bones together in a joint. Sprains often occur when a joint is forced beyond its normal range of motion, such as when twisting an ankle. Symptoms typically include pain, swelling, and bruising. Proper first aid involves the RICE protocol: rest, ice, compression, and elevation for recovery.

90. (B) Compression
In the RICE protocol for treating soft tissue injuries, the 'C' stands for compression. Applying a firm but comfortable elastic bandage to the injured area helps to limit swelling by reducing the buildup of fluid. It also provides some support to the joint. Care must be taken not to wrap the bandage too tightly, as this could restrict blood circulation. When combined with rest and ice, compression is an effective way to manage initial injury symptoms.

91. (D) Air pollution
The intensification of the greenhouse effect is primarily a result of air pollution. The burning of fossil fuels releases greenhouse gases like carbon dioxide into the atmosphere, which trap heat from the sun and lead to a rise in average temperatures. This environmental issue has profound health implications, including an increase in heat-related illnesses and the spread of certain diseases. Reducing emissions is critical for mitigating these long-term climate impacts and protecting the health of the population.

92. (B) P-3, Q-4, R-1, S-2
Each vitamin has primary dietary sources important for maintaining health. Vitamin A is found in orange-colored vegetables like carrots. Vitamin C is abundant in citrus fruits and bell peppers. Vitamin D is unique because it is produced by the skin in response to sunlight and is found in fortified milk. Vitamin K is found in green leafy vegetables. Eating a varied diet that includes these diverse food groups ensures that the body receives all necessary vitamins.

93. (C) When a person is diagnosed with a specific deficiency, like iron-deficiency anemia.
The most appropriate use of nutritional supplements is to address a specific, medically diagnosed deficiency that cannot be corrected by diet alone. For example, a person with iron-deficiency anemia may need iron tablets to restore healthy blood levels. Supplements are not intended to replace a balanced diet of whole foods. Using them under medical supervision ensures that the dosage is correct and that they are truly necessary for the individual's specific health needs and recovery.

94. (D) It damages blood vessels and raises blood pressure.
Smoking is highly detrimental to cardiovascular health because chemicals in tobacco smoke damage the lining of the blood vessels. This damage promotes the buildup of fatty plaques, leading to atherosclerosis. Additionally, smoking causes an immediate increase in heart rate and blood pressure, placing significant strain on the heart muscle. Over time, these effects significantly increase the risk of heart attack and stroke. Quitting smoking is one of the most effective ways to improve long-term heart health.

95. (D) Statement I is false, but Statement II is true.
Principles of health education emphasize that passive learning is generally less effective for changing behavior. Instead, modern approaches focus on active methods such as participation and group discussions. These techniques involve the learners directly, making the information more relevant and helping them develop the skills needed to apply health concepts to their own lives. By engaging participants in the process, health educators can foster a deeper understanding and a stronger commitment to adopting healthy lifestyle choices.

96. (B) Access to safe parks and clean water.
The environment plays a crucial role in health by providing external conditions that support well-being. Having access to safe parks encourages physical activity, while clean water is fundamental for preventing water-borne diseases. These are clear examples of how community infrastructure directly impacts public health. Addressing environmental factors is a key strategy in public health to ensure that all individuals have the opportunity to live healthy lives. In contrast, inherited traits like eye color are purely genetic.

97. (B) Track growth and immunization status.
Maintaining health records for students is a vital component of a school health programme.

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49. (B) Protein
Nutrients are categorized into macronutrients and micronutrients based on the quantities required. Proteins, along with carbohydrates and fats, are macronutrients because they are needed in large amounts to provide energy and serve as building blocks for tissues. In contrast, vitamins and minerals like Vitamin C, iron, and zinc are micronutrients, required in smaller quantities. A balanced diet must include adequate amounts of all macronutrients to support growth and repair.

50. (A) To treat medically diagnosed deficiencies.
Nutritional supplements are products designed to provide nutrients that may be missing from a person's diet. Their primary and most appropriate use is to treat specific deficiencies that have been medically diagnosed by a healthcare professional. Supplements should not be used as a replacement for a balanced diet of whole foods. Using them without a clear medical need can sometimes lead to excessive intake or imbalances that affect overall health.

51. (C) Nicotine
Nicotine is the primary addictive substance found in tobacco products. It is a powerful stimulant that reaches the brain quickly, creating a temporary feeling of pleasure and alertness. This effect leads to physical and psychological dependence, making it very difficult for users to quit. While other components like tar and carbon monoxide cause significant physical damage to the lungs and heart, nicotine is what drives the addictive cycle associated with smoking.

52. (D) Actions taken to stop drug use early.
Prevention in the context of drug abuse refers to proactive measures taken to stop individuals from initiating drug use or to intervene before experimental use becomes an addiction. These strategies include education about risks, developing life skills, and strengthening protective factors like family support. Unlike treatment or rehabilitation, which occur after a problem has developed, prevention aims to reduce the overall incidence of drug-related issues within a population through early awareness.

53. (C) Forming satisfying interpersonal relations.
Social health is a key dimension of the health spectrum that focuses on an individual's ability to interact effectively with others. It involves forming and maintaining satisfying interpersonal relationships, adapting to social situations, and possessing a sense of belonging within a community. Good social health contributes to emotional resilience and provides a support system during challenging times. It is not about social media following but the quality of real-life human connections.

54. (B) Scientifically accurate and reliable.
Credibility is a fundamental principle of health education, ensuring that the information provided is based on proven scientific facts and reliable evidence. For health messages to be effective, the audience must trust the source and the accuracy of the content. Using unverified claims can lead to confusion and potentially harmful health choices. Providing high-quality, evidence-based information builds the authority of the educator and increases the likelihood that individuals will adopt healthy behaviors.

55. (A) A, B, C, D
A comprehensive school health programme is built on several key components designed to support student well-being. These typically include a healthful school environment, which ensures safety and hygiene; school health services for check-ups and first aid; health education to provide students with essential knowledge; and nutritional services like healthy school meals. While advanced athletic coaching may be part of an extracurricular program, it is not a core requirement for basic health objectives.

56. (A) Both A and R are true and R is the correct explanation of A.
Combining exercise and dieting is the most effective approach to weight control because they address different sides of the energy balance equation. Dieting focuses on reducing energy intake, while exercise increases energy expenditure. Furthermore, physical activity helps preserve and build lean muscle mass, which can increase the body's resting metabolic rate. This dual approach creates a more sustainable energy deficit and improves overall body composition and cardiovascular health compared to isolation.

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reflexes are impaired. Any liquid poured into their mouth can easily enter the windpipe and go into the lungs instead of the stomach. This process, known as aspiration, can cause the person to choke or develop severe pneumonia. The primary focus should be maintaining an airway and seeking medical help.

74. (A) Turn off the power or use a non-conductor.
If a person is in contact with a live electrical source, the first aider's immediate priority is to break the contact without becoming a victim. The safest method is to turn off the power at the main switch. If this is not possible, a non-conducting object like a dry wooden stick should be used to push the person away. Touching the victim directly with bare hands while they are electrified will cause the rescuer to be shocked.

75. (D) Skin cancer
Exposure to ultraviolet radiation from the sun is a major environmental risk factor for skin cancer. UV rays can damage the DNA in skin cells, leading to uncontrolled growth and the development of tumors. While some sunlight is necessary for Vitamin D production, excessive and unprotected exposure increases the risk significantly. Using sunscreen, wearing protective clothing, and seeking shade are essential preventive measures to protect the skin from these harmful effects over a lifetime.

76. (B) Fruits, vegetables, and whole grains
Dietary fiber is a type of carbohydrate found in plant-based foods that the body cannot digest. The best sources include a variety of fruits, vegetables, and whole grains. Consuming adequate fiber is essential for digestive health, as it promotes regular bowel movements and can help lower cholesterol levels. Unlike meats or dairy, which contain little to no fiber, a diet rich in plant foods ensures the body receives both soluble and insoluble fiber for health.

77. (C) Vitamin C
Vitamin C is a water-soluble vitamin found abundantly in citrus fruits like oranges and lemons. It is essential for the production of collagen, a protein that helps hold body tissues together. A severe deficiency of Vitamin C leads to scurvy, a disease characterized by bleeding gums and slow wound healing. Since the human body cannot produce its own Vitamin C, regular consumption through diet is necessary to prevent this condition and support overall immune function.

78. (D) Distress felt when stopping drug use.
Withdrawal symptoms refer to the range of physical and psychological distress that occurs when a person who is dependent on a substance suddenly stops their intake. These symptoms happen because the body has adapted to the presence of the drug and must readjust to its absence. The severity and type of symptoms depend on the drug used and the level of dependence. Withdrawal is a major obstacle in recovery and often requires medical supervision.

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79. (C) Holistic concept of health
The holistic concept of health moves beyond the simple absence of illness to emphasize a state of complete physical, mental, and social well-being. It views the individual as a whole system where various dimensions are interconnected. This model suggests that to achieve true health, one must address emotional stability and social relationships alongside physical fitness. This comprehensive approach is now widely recognized in global public health as the most accurate way to promote well-being.

80. (B) Monitoring student health and identifying problems.
A health appraisal in a school setting is a proactive process used to monitor the physical and emotional well-being of students. It involves regular check-ups and screenings for vision and hearing. The primary role is to identify any health issues early so that students can be referred for appropriate treatment. By detecting problems that might interfere with learning, school health appraisals help ensure that every child has the opportunity to succeed academically and physically.

81. (B) Persistent chest pain or discomfort that may spread to the arm, neck, or jaw.
A heart attack occurs when blood flow to part of the heart muscle is blocked. The hallmark symptom is persistent chest pain or pressure, which often feels like squeezing. This discomfort frequently radiates to the left arm, neck, or jaw. Other symptoms can include shortness of

reduces the blood's ability to carry oxygen. The most common cause is a lack of dietary iron, which is necessary for hemoglobin production. Symptoms often include fatigue, weakness, and paleness. Preventive measures include consuming iron-rich foods like leafy greens. Addressing anemia is important for maintaining energy levels and ensuring the proper functioning of all vital organs in the body.

66. (A) Liver
The liver is the organ most severely affected by chronic alcohol abuse because it is responsible for metabolizing alcohol and removing it from the bloodstream. Excessive alcohol consumption over time causes inflammation and scarring of the liver tissue, leading to conditions like fatty liver and eventually cirrhosis. This damage impairs the liver's ability to perform essential functions, such as filtering toxins. Advanced liver disease is often irreversible and can be life-threatening without change.

67. (C) Smoking cigarettes.
Health education aims to equip individuals with healthy strategies for managing stress, such as mindfulness and physical activity. In contrast, smoking cigarettes is an example of an unhealthy coping mechanism. While it may provide temporary relief due to nicotine, it leads to long-term physical harm, including addiction and heart disease. Identifying and avoiding such maladaptive behaviors is a key goal of health promotion programs, as they cause significant damage while offering false relief.

68. (A) 2, 1, 4, 3
Providing first aid for a conscious choking adult requires a specific sequence of actions. First, confirm the obstruction by asking if they are choking. If they can cough, encourage them to keep doing so. If coughing is ineffective, provide five back blows between the shoulder blades. If the object remains, perform abdominal thrusts, also known as the Heimlich maneuver. This progressive approach is designed to clear the airway safely and effectively in an emergency.

69. (C) A safe and hygienic school environment.
Healthful school living refers to the physical and aesthetic environment of the school that promotes the health and well-being of students and staff. This includes aspects such as clean water facilities, proper sanitation, and a safe playground. It also encompasses the psychological climate of the school. A healthful environment is essential for preventing the spread of diseases and creating a space that is conducive to learning and the development of healthy lifelong habits.

70. (B) Viruses
The MMR vaccine is a combination vaccine that provides protection against measles, mumps, and rubella. All three of these illnesses are caused by different types of viruses. Viral infections cannot be treated with antibiotics, making vaccination the most effective public health strategy for prevention. By immunizing children, the vaccine helps prevent widespread outbreaks and protects individuals from potential complications associated with these viral diseases, such as hearing loss or brain inflammation.

71. (A) 1 and 3 only
Sedentary lifestyle diseases are often characterized by specific metabolic symptoms resulting from long-term inactivity. Common indicators include high blood pressure and significant weight gain, particularly around the abdominal area. These factors increase the risk of developing chronic conditions like Type 2 diabetes and heart disease. Identifying these symptoms early allows for lifestyle interventions, such as increased exercise and better nutrition, to prevent more serious health complications from developing and improve long-term wellness outcomes.

72. (A) Total calories consumed and expended.
Energy balance is the fundamental concept in weight control that describes the relationship between energy intake and energy output. It is measured in calories. When the total number of calories consumed through food equals the number of calories expended through metabolism and physical activity, body weight remains stable. A positive balance leads to weight gain, while a negative balance results in weight loss. Managing this relationship is the key to maintaining a healthy weight.

73. (C) Choking or aspiration into the lungs.
A critical rule in first aid is never to give fluids to an unconscious person. When someone is unconscious, their normal swallowing and gag

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57. (C) Indian Council for Child Welfare (ICCW)
The Indian Council for Child Welfare is a prominent private, voluntary organization in India dedicated to the well-being and development of children. Unlike government agencies like the National Institute of Nutrition, it operates as a non-governmental entity. It works on various programs related to child health, education, and protection. Such private agencies play a crucial role in reaching specific populations and addressing diverse community needs through grassroots initiatives that supplement national efforts.

58. (B) Immunization
Immunization is the process of providing immunity to a specific disease by introducing a vaccine into the body. The vaccine contains a weakened or inactivated form of the pathogen, which stimulates the immune system to produce antibodies. This process prepares the body to recognize and fight the actual disease-causer if exposed in the future. It is a highly effective public health tool that has significantly reduced the global burden of infectious diseases.

59. (D) Eczema
Eczema is a skin condition characterized by inflammation that is often classified as a psychosomatic disorder because emotional stress can significantly trigger or worsen flare-ups. While the condition has biological roots, the mind-body connection is a major factor in its management. Psychological distress can lead to physiological changes that manifest as skin irritation. In contrast, diseases like tuberculosis are caused purely by specific pathogens, and scurvy is a direct result of nutritional deficiency.

60. (A) Boost metabolism by building muscle.
The role of exercise in weight control is multi-faceted. Beyond burning calories during activity, regular strength-training exercise helps build muscle mass. Muscle tissue is more metabolically active than fat tissue, meaning the body burns more calories even at rest when muscle mass is higher. This increase in the basal metabolic rate makes it easier to maintain a healthy weight. Exercise also improves cardiovascular health and insulin sensitivity, providing benefits beyond simple weight loss.

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61. (C) To promote recovery.
A primary objective of first aid is to provide immediate care that assists the natural healing process and promotes recovery. This involves stabilizing the victim, alleviating pain, and preventing further complications. While first aid is not a substitute for professional medical treatment, the initial steps taken can significantly influence the final outcome. It is about providing the right support at the right time to bridge the gap between injury and definitive medical care.

62. (A) Use cool water or a wet compress.
For a first-degree burn, such as a minor sunburn, the immediate first-aid goal is to soothe the pain and stop the burning process in the skin. This is best done by applying cool running water or using a clean, wet compress. It is important to avoid using ice, butter, or oils, as these can damage the tissue further. Puncturing any blisters is also discouraged, as it increases the risk of infection in the area.

63. (D) Sound pollution
Sound pollution is caused by excessive, unwanted, and harmful man-made sounds in the environment. Sources include traffic and industrial machinery. Prolonged exposure to high noise levels can lead to various health problems, including permanent hearing loss, increased stress, and sleep disturbances. Unlike other forms of pollution that might be visible, sound pollution affects health through auditory and psychological pathways, necessitating measures like soundproofing and noise regulations to protect the public from harmful effects.

64. (B) Building and repairing body tissues.
Proteins are essential macronutrients composed of amino acids that serve as the fundamental building blocks for the body. Their primary role in a balanced diet is to support the growth, maintenance, and repair of all body tissues, including muscles, organs, and skin. Proteins are also involved in the production of enzymes and hormones. While they can provide energy if needed, the body's preferred sources for fuel are carbohydrates and fats for efficiency.

65. (B) Anemia
Anemia is a medical condition characterized by a deficiency of healthy red blood cells, which

breath and nausea. Recognizing these signs and seeking emergency medical help immediately is critical for minimizing heart muscle damage and increasing the person's chances of survival and recovery.

82. (A) Both A and R are true and R is the correct explanation of A.
First-aid skills are essential for coaches and teachers because sports involve a higher risk of physical injury. Providing immediate care, such as icing a sprain, can significantly reduce the severity of the injury and alleviate pain. This prompt intervention also prevents further damage that could occur during movement. Therefore, being trained in first aid is a vital part of ensuring student safety and promoting a quick and healthy recovery from sports-related accidents and emergencies.

83. (C) Fecal contamination.
The presence of E. coli bacteria in a water source is a critical indicator of fecal contamination. These bacteria normally live in the intestines of humans and animals. While most strains are harmless, their presence suggests that the water has been exposed to waste and may contain other dangerous pathogens. Testing for E. coli is a standard procedure in water quality monitoring to ensure the safety of drinking and recreational water supplies for the public.

84. (D) Provide energy and absorb vitamins.
Fats are essential macronutrients that serve several vital functions in the body. They are a concentrated source of energy, providing more than twice the calories per gram compared to carbohydrates. Additionally, dietary fats are necessary for the absorption of fat-soluble vitamins, including Vitamins A, D, E, and K. Fats also provide insulation and protect vital organs. A healthy diet should include moderate amounts of unsaturated fats for optimal physiological health and systemic function.

85. (C) Power
Health-related physical fitness focuses on components that directly influence overall health and reduce the risk of chronic diseases. These include body composition, flexibility, muscular endurance, and cardiorespiratory endurance. Power, on the other hand, is a skill-related fitness component. It involves the ability to exert maximum force in a short period. While power is important for athletic performance, it is not considered a primary requirement for basic health maintenance and chronic disease prevention in the general population.

86. (B) Tuberculosis
Tuberculosis is a communicable disease caused by the bacterium Mycobacterium tuberculosis. It primarily affects the lungs and can be spread from person to person through the air when an infected individual coughs. In contrast, conditions like Type 2 diabetes and hypertension are non-communicable diseases. They are generally caused by a combination of genetic and lifestyle factors and cannot be transmitted directly between individuals. Preventing the spread of tuberculosis requires early diagnosis, treatment, and public health.

87. (D) It can be achieved through regular physical activity and a balanced diet.
Sedentary lifestyle diseases, such as heart disease and Type 2 diabetes, are largely preventable through healthy lifestyle choices. Engaging in regular physical activity helps maintain cardiovascular health and manage weight. Combining this with a balanced diet rich in whole foods ensures the body receives necessary nutrients while avoiding excessive intake of processed fats. These proactive steps are far more effective than relying on medical treatments later. Consistency in these habits is the key to long-term health.

88. (A) Creating a negative energy balance.
Weight loss is achieved by creating a negative energy balance, where energy expenditure exceeds energy intake. In this scenario, the individual is both reducing calories consumed and increasing calories burned through exercise. This forces the body to use its stored fat reserves for fuel, resulting in weight loss over time. This dual approach is generally more effective and sustainable than either method alone, as it promotes better metabolic health and preserves lean muscle mass during the process.

89. (C) Ligaments
A sprain is a common type of sports injury that specifically involves the stretching or tearing

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choices can influence the expression of genetic traits.

41. (D) Statement I is false, but Statement II is true.
A successful school health programme is not the sole responsibility of a single person like the school nurse. Instead, it requires a collaborative effort involving teachers, administrators, parents, students, and community health services. Teachers can observe student health daily, while parents ensure healthy habits at home. Coordination between these groups ensures a comprehensive approach to student wellness, covering health services, education, and a safe environment for all.

42. (B) P-3, Q-4, R-1, S-2
Different communicable diseases require specific preventive strategies. Tetanus is effectively prevented through the Tetanus Toxoid immunization. Malaria prevention focuses on mosquito control measures to stop the vector from transmitting the parasite. Cholera, being a water-borne disease, is prevented by ensuring safe drinking water and proper sanitation. Measles is prevented through the MMR vaccine, which provides immunity against the virus. Understanding these specific modes is key to controlling the spread of infectious diseases.

43. (C) Significant time sitting with minimal exercise.
A sedentary lifestyle is characterized by a lack of regular physical activity and spending significant portions of the day sitting or lying down. This often involves activities like watching television, using a computer, or sitting at a desk for long periods. Such a lifestyle is a major contributor to various health problems, including obesity, heart disease, and Type 2 diabetes. Increasing daily movement and reducing sitting time are essential for health.

44. (D) Sleep apnea
Sleep apnea is a serious health condition directly associated with obesity. Excess fat deposits around the upper airway can obstruct breathing during sleep, leading to repeated interruptions in oxygen intake. This condition results in poor sleep quality, daytime fatigue, and increased strain on the cardiovascular system. Managing weight through lifestyle changes is a primary treatment for reducing the severity of sleep apnea. Other obesity-related risks include heart disease and Type 2 diabetes.

45. (A) Reducing strain on joints and the heart.
From a health perspective, the primary significance of controlling body weight is to minimize the physical stress placed on the body's vital systems. Excess weight increases the workload on the heart and places significant strain on weight-bearing joints like the knees and hips. Over time, this can lead to cardiovascular disease and chronic joint pain. Maintaining a healthy weight helps preserve the integrity of the skeletal and circulatory systems, ensuring better mobility.

46. (B) Offer cool water in a shaded area.
If a person faints due to heat but remains conscious, the immediate goal is to lower their body temperature and rehydrate them. Moving the person to a cool, shaded area and providing cool water to sip slowly helps stabilize their condition. It is important to have them lie down with their feet slightly elevated. Avoiding stimulants like caffeine is crucial. Monitoring the victim is essential until they fully recover from the heat.

47. (C) Provide warmth and request medical aid.
After a conscious drowning victim has been removed from the water, the first-aid priority is to prevent hypothermia and ensure they receive professional evaluation. Even if they appear fine, water may have entered the lungs, which can cause delayed complications. Wrapping the victim in warm blankets and requesting immediate medical assistance is necessary. Encouraging physical activity is not recommended until the victim has been cleared by medical personnel for safety.

48. (D) Air pollution
Acid rain is primarily a consequence of air pollution. It occurs when emissions of sulfur dioxide and nitrogen oxides from burning fossil fuels react with water, oxygen, and other chemicals in the atmosphere to form acidic compounds. These then fall as rain or snow. Acid rain can have devastating effects, damaging forests, acidifying water bodies, and harming aquatic life. It also causes the deterioration of buildings and monuments over time.

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The primary purpose is to provide a continuous history of a child's health status, including physical growth and immunization history. This information allows school health services to monitor development, identify potential problems early, and ensure that all students are protected against communicable diseases. These records are used for health management and are kept confidential to protect the privacy of students and families.

98. (B) A, B, and D only
Good personal hygiene involves consistent practices that promote cleanliness and prevent disease. Brushing teeth twice daily, frequent handwashing with soap, and regular bathing are essential actions for health. In contrast, sharing personal items like toothbrushes can spread pathogens between individuals, and wearing dirty clothes can harbor bacteria. By following proper hygiene habits, individuals protect themselves and their community from various infections and contribute to overall physical and social well-being. These practices are fundamental to wellness.

99. (C) A communicable disease
A communicable disease is an illness that can be transmitted from one person to another, either through direct contact or indirectly via contaminated surfaces or airborne droplets. These diseases are caused by pathogens such as bacteria or viruses. In contrast, hereditary and degenerative diseases are non-communicable and cannot be spread between individuals. Controlling the transmission of communicable diseases is a major focus of public health, requiring strategies like vaccination, sanitation, and education on personal hygiene habits.

100. (D) Excessive thirst and frequent urination.
Diabetes is a chronic metabolic disorder often associated with a sedentary lifestyle. One of its most common and hallmark symptoms is frequent urination and excessive thirst. This happens because high blood sugar levels force the kidneys to work harder to filter and absorb the excess glucose, leading to increased fluid loss from the body. Recognizing these early warning signs is crucial for the timely diagnosis and management of the condition to prevent serious long-term medical complications.

101. (A) Both A and R are true and R is the correct explanation of A.
Obesity is a major risk factor for developing Type 2 diabetes because excess body fat, especially around the abdomen, is closely linked to insulin resistance. In this state, the body's cells do not respond properly to insulin, making it difficult for glucose to enter cells for energy. As a result, blood sugar levels remain high. Managing weight through a healthy diet and regular physical activity can improve insulin sensitivity and significantly reduce the risk of this metabolic disease.

102. (B) Focus on a balanced, calorie-controlled diet that is sustainable long-term.
Effective dieting for weight control is not about extreme restrictions, which can be difficult to maintain and may lead to deficiencies. Instead, it is advised to follow a balanced, calorie-controlled diet that includes a variety of nutrient-dense foods from all groups. This approach ensures the body gets essential nutrients while maintaining a sustainable energy deficit. Long-term success in weight management comes from making healthy choices that can be integrated into a person's permanent daily lifestyle.

103. (C) The risk of infection is much higher.
In first aid, the primary concern with an open fracture, where the bone pierces the skin, is the significantly higher risk of infection. Because the protective skin barrier is broken, bacteria can enter the wound and reach the bone. A closed fracture does not have this external exposure. While both types require immobilization, an open fracture is a medical emergency that requires careful cleaning and professional care to prevent serious infectious complications that can affect long-term healing.

104. (D) Pale, cold, and clammy skin.
Shock is a life-threatening condition that occurs when the body's organs do not receive enough oxygenated blood. A characteristic symptom is skin that appears pale, cold, and clammy to the touch. This happens as the body diverts blood away from the skin toward vital organs like the heart and brain. Other common signs include a rapid but weak pulse and shallow breathing. Recognizing these symptoms quickly and

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seeking emergency medical help while keeping the victim warm is essential.

105. (C) Nutrient pollution from fertilizers and sewage.
Eutrophication occurs when water bodies receive an excess of nutrients, specifically nitrogen and phosphorus, from agricultural runoff and untreated sewage. This stimulates the rapid growth of algae. When these algae die and decompose, they deplete the dissolved oxygen in the water, which can kill fish and other aquatic life. This form of water pollution significantly disrupts the balance of aquatic ecosystems and degrades water quality for other uses, highlighting the need for better waste management and farming practices.

106. (A) They are required by the body in very small amounts.
Vitamins and minerals are classified as micronutrients because the human body requires them in relatively small, often microscopic, quantities for proper functioning. Despite the small amounts needed, they are just as essential as macronutrients for maintaining health. Micronutrients play critical roles in various physiological processes, including energy production and immune function. A deficiency in any essential micronutrient can lead to serious health problems, highlighting the need for a varied and balanced diet rich in whole foods.

107. (D) An iron tablet.
A nutritional supplement is a manufactured product designed to provide a specific nutrient that may be missing from a person's diet. An iron tablet is a classic example, often used to treat iron deficiency. Whole foods like apples and milk contain a complex mix of many nutrients naturally. In contrast, a supplement typically provides a concentrated dose of one or a few vitamins in pill form. They should be used to complement, not replace, a healthy diet.

108. (A) Respiratory and nervous systems
Drugs that act as central nervous system depressants, such as alcohol, slow down brain activity and the transmission of nerve impulses. This directly affects the nervous system, leading to impaired judgment and coordination. In high doses, these substances can also severely suppress the respiratory system, slowing down breathing to dangerous or even fatal levels. This combination makes these drugs particularly hazardous in overdose situations. Understanding these physiological impacts is critical for recognizing the risks associated with depressant substance use.

109. (C) To achieve maximum wealth regardless of well-being.
The objectives of health are centered on achieving a state of positive physical, mental, and social well-being. This includes the ability to adapt to challenges, manage daily stress, and live a life free from preventable disease and disability. While financial stability can influence health, the pursuit of wealth at the expense of one's well-being is not a health objective. True health focuses on the quality of life and the optimal functioning of the individual within their environment.

110. (A) The community members are actively involved in planning and implementing health programs.
The principle of participation in health education emphasizes that programs are most successful when the target community is involved from the beginning. This means that community members take an active role in identifying their own health needs and planning interventions. Participation ensures that health initiatives are culturally relevant and more likely to be accepted and sustained by the people. It shifts the focus from doing things for people to working together with them for better health outcomes for all.

111. (D) Cardiorespiratory endurance
Cardiorespiratory endurance is the component of health-related fitness that reflects the ability of the heart and lungs to deliver oxygen to the muscles during sustained physical activity. It is essential for performing prolonged tasks without excessive fatigue and is a key indicator of cardiovascular health. Activities like running and swimming are excellent for improving this endurance. Maintaining good cardiorespiratory fitness reduces the risk of developing chronic lifestyle diseases such as heart disease and Type 2 diabetes over time.

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112. (B) National, government health-promoting agency.
The Central Health Education Bureau is a national government agency in India under the Ministry of Health and Family Welfare. Its primary role is to provide leadership for health education activities throughout the country. It develops educational materials and designs campaigns to promote healthy behaviors among the public. As a government entity, it plays a vital role in implementing national health policies and ensuring that accurate health information reaches diverse populations across India to improve overall community wellness.

113. (A) 2, 3, 4, 1
The progression of a communicable disease in an individual follows a standard chronological order. It begins with the incubation period, the time between exposure and the first symptom. This is followed by the prodromal period, marked by early, non-specific symptoms. Next is the clinical period, where characteristic signs appear. Finally, the person enters the period of convalescence and recovery. Understanding this timeline is important for diagnosis, treatment, and determining when an individual is contagious to others in the community.

114. (D) Developing effective stress management techniques.
Since psychosomatic disorders are physical conditions triggered by psychological factors, prevention focuses on managing the underlying emotional and mental strain. Developing effective stress management techniques, such as mindfulness, regular exercise, and healthy social interactions, is a key strategy. These practices help the body maintain its physiological balance and reduce the negative impact of stress on physical health. Ignoring stress only addresses the symptoms rather than the root cause of these interconnected mind-body issues that affect overall health.

115. (A) Increased risk of cardiovascular disease.
Central obesity, which is the accumulation of excess fat around the abdomen, is a significant health risk factor. This type of fat is more metabolically active and is strongly linked to an increased risk of cardiovascular disease, Type 2 diabetes, and hypertension. It can lead to insulin resistance and higher levels of inflammation in the body. Monitoring waist circumference is a simple way to assess this risk and highlights the importance of targeted weight management strategies for overall long-term health.

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116. (B) To help preserve lean muscle mass.
When combining exercise and dieting for weight control, it is important to consume adequate protein to help preserve lean muscle mass. During a caloric deficit, the body may break down muscle tissue for energy. Maintaining muscle is crucial because it is more metabolically active than fat, helping to keep the metabolic rate higher. Additionally, protein promotes satiety, which can help with diet adherence. Ensuring sufficient protein intake alongside physical activity ensures that weight loss comes primarily from fat stores.

117. (B) Immobilize the limb as it was found.
The immediate first-aid priority for a suspected limb fracture is to prevent further damage by immobilizing the area. It is critical not to try to straighten or move the limb back into its normal position, as this could cause additional pain and injury to surrounding tissues, nerves, or blood vessels. Using a splint or padding to keep the limb exactly as it was found helps stabilize the bone until professional medical help can provide definitive treatment and proper imaging for recovery.

118. (C) 1, 3, and 4 only
The primary objectives of first aid are centered on immediate life-saving care and stabilization. These include preserving life, preventing the victim's condition from worsening, and promoting recovery. A first aider is not expected to provide a definitive medical diagnosis, as this requires professional medical training and diagnostic tools. Instead, the focus is on recognizing the emergency and providing necessary support to bridge the gap until professional medical help arrives. This structured approach ensures the best possible outcome for the victim.

119. (C) Pesticides and fertilizers
Runoff from agricultural fields is a major source of water pollution because it frequently contains high concentrations of pesticides and fertilizers. Pesticides can be toxic to aquatic life and

main first-aid principle is to cool the burn with cool running water to stop heat damage and then cover the area with a clean, loose dressing. This dressing protects the blisters from breaking, which reduces the risk of infection and minimizes pain. It is critical not to puncture blisters or apply home remedies like butter. Professional medical evaluation is often recommended for these burns.

165. (C) Penetrate lungs and enter the bloodstream.
High levels of fine particulate matter, known as PM2.5, are a major health concern because these tiny particles are small enough to be inhaled deep into the lungs. From there, they can actually cross the air-blood barrier and enter the circulatory system. Once in the bloodstream, PM2.5 can cause systemic inflammation and oxidative stress, leading to a range of serious health problems, including respiratory diseases and heart attacks. Reducing PM2.5 levels is vital for protecting public health in urban environments.

166. (B) Goitre
Iodine is a trace mineral essential for the production of thyroid hormones, which regulate metabolism and growth. A person whose diet is severely lacking in iodine is at high risk of developing a goitre, which is a visible swelling of the thyroid gland in the neck. This happens as the gland enlarges in an attempt to capture more iodine from the blood. Severe deficiency can also lead to impaired cognitive development. Using iodized salt is a common public health measure to prevent deficiency.

167. (D) Risk education and developing refusal skills.
Primary prevention measures for drug abuse aim to prevent substance use before it ever begins. A key strategy is providing risk education to inform individuals, especially young people, about the dangers and consequences of drug use. This is often combined with building life skills, such as refusal skills, which empower individuals to resist peer pressure. Unlike treatment or detoxification, which occur after addiction has developed, these preventive steps focus on building resilience and awareness within a population to reduce the overall incidence.

168. (A) Active learning
Active learning is a health education approach that moves away from traditional, one-way lectures to involve learners directly in the educational process. This method respects the experiences and existing knowledge of the participants and uses interactive techniques like group discussions and problem-solving. By being actively engaged, learners are more likely to find the information relevant to their own lives and develop the confidence and skills needed to maintain healthy behaviors. This approach fosters a deeper and more meaningful understanding of health concepts.

169. (A) A, B, C, and D only
Obesity is a major risk factor for a wide range of chronic health problems. It is directly linked to an increased risk of Type 2 diabetes, hypertension, and several types of cancer. Additionally, excess weight places significant strain on joints, often leading to osteoarthritis, particularly in the knees. While Type 1 diabetes is an autoimmune condition not caused by obesity, Type 2 diabetes is strongly associated with excess body fat. Managing weight is therefore a critical strategy for reducing the overall health burden.

170. (A) Fever
A fever is a common symptom of many communicable diseases. It is a natural part of the body's immune response to an invading pathogen, such as a virus or bacterium. By raising the body's temperature, the immune system creates an environment that is less favorable for the pathogen to multiply while also activating various defense mechanisms. While other conditions like high cholesterol are health problems, they are not symptoms of a communicable disease and cannot be transmitted directly from person to person.

171. (D) Sit up, lean forward, and pinch the soft nose.
The correct first-aid posture for a nosebleed is to sit up and lean forward slightly. This position prevents blood from flowing down the back of the throat, which can cause choking or nausea. Pinching the soft part of the nose firmly for several minutes helps to apply pressure to the bleeding vessels and promote clotting. Tilting the head back is not recommended, as it does not stop the bleeding and can lead to blood being swallowed. Most nosebleeds are manageable.

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highly effective public health tool for preventing the initial spread of infections and maintaining personal and community health.

127. (D) They are primarily caused by physical inactivity.
Sedentary lifestyle diseases, such as coronary heart disease and Type 2 diabetes, are a group of non-communicable conditions that are primarily driven by prolonged periods of physical inactivity. These diseases are not contagious and cannot be cured by a single medication. They often develop over time due to the negative physiological effects of a lack of exercise combined with poor nutrition. The most effective way to address these conditions is through long-term lifestyle changes, including regular movement and a balanced diet.

128. (A) It increases total daily energy expenditure.
From a physiological standpoint, exercise is a critical component of weight control because it directly increases the total number of calories the body expends each day. Physical activity uses energy for muscle contraction, and higher-intensity exercise can also elevate the metabolic rate for a period after the session is over. By increasing energy output, exercise helps create the caloric deficit needed for weight loss or helps maintain a stable weight when balanced with energy intake from food and drink consumption.

129. (C) A muscle or tendon
A strain is a common sports injury that occurs when a muscle or a tendon is overstretched or torn. Tendons are the tough, fibrous tissues that connect muscles to bones. Strains often happen during physical activity when a muscle is forced to stretch beyond its limits or contract too forcefully. Symptoms usually include pain and muscle weakness. Proper first aid for a strain includes rest and the application of ice to reduce swelling and promote the natural healing process for recovery.

130. (B) Flush the eye with clean water or saline.
If a person has a small, non-embedded object in their eye, the safest first-aid action is to gently flush the eye with clean water or a sterile saline solution. This can help wash the object out without causing damage to the delicate tissues. It is crucial not to rub the eye, as this can cause the object to scratch the surface of the cornea. If the object remains, professional medical attention should be sought immediately for safe removal.

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131. (D) Chlorofluorocarbons (CFCs)
The depletion of the Earth's ozone layer is primarily caused by a group of man-made air pollutants known as chlorofluorocarbons. These chemicals, formerly used in refrigeration and aerosol sprays, release chlorine atoms when they reach the upper atmosphere, which then break down ozone molecules. The thinning of the ozone layer allows more harmful UV radiation to reach the surface, increasing the risk of skin cancer. Global agreements have significantly reduced the use of these substances to protect the ozone layer.

132. (A) P-3, Q-1, R-2, S-4
Each mineral performs specific and essential functions within the human body. Calcium is fundamental for the formation of strong bones and teeth. Iron is a key component of hemoglobin, which is necessary for transporting oxygen in the blood. Iodine is required by the thyroid gland to produce hormones that regulate metabolism. Sodium is important for maintaining proper fluid balance and ensuring the correct transmission of nerve impulses. A balanced diet ensures the body receives these and other minerals in required amounts.

133. (C) Pregnant women with higher nutrient needs.
While a balanced diet is the preferred source of nutrients, certain groups of individuals may be medically advised to take nutritional supplements to meet increased requirements. Pregnant women often need folic acid and iron supplements to support fetal development and prevent complications. Other groups might include individuals with specific malabsorption issues. In these cases, supplements are used under medical guidance to ensure optimal health and should not be seen as a replacement for healthy eating habits for the general population.

134. (D) A is false but R is true.
The assertion that secondhand smoke is harmless is incorrect. Research has clearly shown that the smoke inhaled by non-smokers contains the same toxic and carcinogenic chemicals that the smoker inhales. This exposure increases the risk of heart disease, lung cancer, and respiratory

contaminate drinking water. Fertilizers, which are rich in nutrients, can lead to eutrophication and harmful algal blooms in water bodies. Implementing sustainable farming practices and reducing the use of these chemicals are essential for protecting water quality and the health of both humans and the environment for future generations.

120. (D) Fiber
Dietary fiber is a class of carbohydrates found in plant foods that includes both soluble and insoluble types. Soluble fiber dissolves in water and can help lower blood sugar and cholesterol levels. Insoluble fiber does not dissolve and is crucial for promoting regular bowel movements and maintaining overall digestive health. Since the body cannot digest fiber, it provides several health benefits without adding calories. A diet rich in fruits, vegetables, and whole grains is necessary to ensure adequate intake.

121. (C) A severe deficiency of dietary protein.
Kwashiorkor is a severe form of malnutrition that primarily affects children and is caused by an extreme deficiency of dietary protein. A characteristic sign of the condition is swelling, particularly in the abdomen, giving it a bloated appearance. Other symptoms include stunted growth and skin changes. Prevention involves ensuring that children receive a balanced diet with sufficient protein-rich foods, such as beans, nuts, and animal products, for healthy development. Addressing these nutritional needs is critical for preventing long-term physical impairments.

122. (B) Protective factors like family bonds.
Prevention strategies for drug abuse often focus on strengthening protective factors that reduce an individual's vulnerability to substance use. These factors include strong family bonds, positive school environments, and involvement in healthy community activities. By fostering these supportive relationships and environments, individuals develop the resilience and coping skills needed to resist peer pressure. This proactive approach aims to create a foundation of well-being that makes the use of addictive substances less likely to occur in the first place within a community.

123. (D) The quality of person-to-person interactions.
The social dimension of health refers to the way an individual interacts and relates to others within their community. It is best illustrated by the quality and depth of one's person-to-person interactions and the ability to build and maintain healthy relationships. Good social health involves having a reliable support system, communicating effectively, and feeling a sense of belonging. This dimension is essential for overall well-being, as positive social ties are linked to better emotional resilience and physical health outcomes.

124. (A) Culturally sensitive and relevant to needs.
For health instructions to be effective in a community health program, they must be culturally sensitive and specifically address the needs and context of the target population. Using language and concepts that are familiar to community members makes the information more relatable and increases the likelihood of behavior change. This approach respects local values and traditions while providing essential health knowledge. Information that ignores the local culture is often misunderstood, reducing the overall impact of the health initiative on community wellness.

125. (C) Private, voluntary health-promoting agency.
The Indian Red Cross Society is a prominent private, voluntary organization dedicated to humanitarian work and promoting health in India. While it works closely with the government, it operates as an independent, non-governmental entity. It provides a wide range of services, including disaster relief, blood banking, and community health programs. Such voluntary agencies play a vital role in public health by mobilizing volunteers and resources to reach people in need, supplementing the efforts of government agencies in various health initiatives.

126. (B) It helps to remove or destroy pathogens.
Personal hygiene is a critical defense against communicable diseases because consistent practices like regular handwashing help to physically remove or destroy disease-causing pathogens on the body. This significantly reduces the chance of germs entering the body and limits their transmission to other people and surfaces. While hygiene is not a substitute for medical treatments like vaccines, it is a fundamental and

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142. (B) Is a sticky, carcinogenic lung coating.
Tar is a major byproduct of burning tobacco and is one of the most harmful components of cigarette smoke. It is a sticky, brownish substance that coats the inside of the lungs and the cilia, which are the tiny hair-like structures responsible for clearing mucus from the airways. This coating contains numerous carcinogenic chemicals that can damage lung cells and lead to the development of cancer. Tar also contributes significantly to the irreversible damage seen in chronic respiratory diseases.

143. (D) Tracks fluctuating health and interventions.
The spectrum of health model is highly useful in public health because it recognizes that an individual's health status is not fixed but fluctuates throughout their life. By visualizing health as a dynamic continuum, health professionals can track these changes and identify where specific interventions—such as prevention or treatment—are most needed. This model encourages a proactive approach to health, aiming to move people toward the "positive health" end of the spectrum through continuous support, care, and lifestyle management.

144. (A) Health decisions involve personal and social goals.
Motivation in health education is based on the understanding that individuals are more likely to change their behavior when they see a connection to their own personal and social goals. People are motivated by things they value, such as being healthy enough to participate in activities they enjoy. Effective health education identifies these internal motivators rather than relying solely on external rewards. By aligning health messages with what matters most to people, educators can inspire lasting and voluntary behavior change.

145. (C) Immune response and pathogen damage.
The symptoms of a communicable disease are the result of the damage caused directly by the invading pathogen and the body's own immune response as it tries to fight the infection. For example, a fever is part of the immune response designed to make the body less hospitable to pathogens. Other symptoms, like coughing or rashes, may be caused by tissues being damaged by the multiplying organisms. Together, these processes manifest as the signs and symptoms characteristic of an infectious illness.

146. (B) Begin cardiopulmonary resuscitation (CPR).
If a person is found unconscious and not breathing, it is a life-threatening emergency. After ensuring the scene is safe and calling for help, the most critical first-aid action is to begin cardiopulmonary resuscitation immediately. CPR involves performing chest compressions and providing rescue breaths if trained. This action helps manually pump blood to the brain and other vital organs, providing the oxygen needed for survival until professional medical teams can take over with advanced life support measures.

147. (A) 3, 4, 1, 2
The RICE protocol for a sprained ankle follows a logical sequence to manage injury. First, rest the injured area and avoid putting weight on it to prevent further damage. Next, apply an ice pack to reduce pain and swelling. Then, apply a compression bandage to further control swelling. Finally, elevate the injured ankle above the level of the heart to help fluid drain away from the injury. This combined approach is most effective when started immediately after injury.

148. (B) 60% Carbohydrates, 15% Protein, 25% Fat
A generally recommended ratio for a balanced diet for the general population is approximately 60% carbohydrates, 15% protein, and 25% fat. This distribution ensures that the body receives its primary energy from carbohydrates while providing enough protein for tissue repair and fats for essential physiological functions and vitamin absorption. While these ratios can be adjusted based on individual health needs, this balance supports overall health, energy levels, and the prevention of chronic nutritional and metabolic lifestyle diseases.

149. (C) Brain tissue shrinkage and impairment.
Long-term heavy alcohol consumption has profound negative effects on the brain. Chronic exposure can lead to the actual shrinkage of brain tissue and the death of nerve cells. This structural damage results in significant cognitive impairment, including problems with memory, learning, and decision-making. These effects are often irreversible and can lead to serious neurological disorders. Understanding these

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poison control center or emergency medical services. Professional guidance is critical because the correct first-aid action depends entirely on the type of poison and the victim's condition. You should never induce vomiting or give anything to drink unless specifically instructed by a professional, as the wrong action could cause more harm than the poison itself.

180. (A) Exceeding your specific level of medical training.
A fundamental principle of first aid is to provide care only within the limits of your knowledge and training. Attempting procedures beyond your skill level can unintentionally cause more harm to the victim. The core objectives of first aid are to preserve life, prevent the condition from worsening, and arrange for transport to a medical facility. By staying within their competence, a first aider provides safe and effective initial support while waiting for professional medical personnel to provide definitive definitive care.

181. (C) Using ear protection in noisy environments.
The primary and most effective preventive measure against the harmful health effects of sound pollution is to reduce exposure to loud noises. In environments where noise levels are high, such as construction sites, using ear protection like earplugs is critical for preventing permanent hearing damage. While other measures like surgery address the consequences of exposure, protective gear stops the damage at the source, safeguarding long-term auditory health and reducing noise-related stress and hypertension in individuals exposed to high volumes.

182. (B) Pellagra
Pellagra is a disease caused by a severe deficiency of Niacin, also known as Vitamin B3. The condition is classically characterized by the "three Ds": dermatitis, which is a scaly skin rash; diarrhea; and dementia, or mental confusion. If left untreated, it can be fatal. Ensuring a diet that includes a variety of protein-rich foods, whole grains, and vegetables is essential for preventing this condition. Pellagra was once widespread but is now rare in areas with diverse, nutrient-rich food supplies.

183. (D) Birth defect patterns from maternal alcohol use.
Fetal Alcohol Syndrome refers to a specific group of birth defects and developmental issues that can occur in a child whose mother consumed alcohol during pregnancy. Because alcohol crosses the placenta, it can interfere with the normal development of the fetus's brain and other organs. This can lead to physical deformities, cognitive disabilities, and behavioral problems that persist throughout life. Since there is no known safe amount of alcohol during pregnancy, the most effective prevention is total abstinence from alcohol while pregnant.

184. (A) Optimal well-being and ability to face challenges.
In the spectrum of health, "positive health" represents the highest level of well-being, where an individual is not just free from disease but possesses optimal physical, mental, and social vitality. This state involves having the resilience and resources to successfully cope with the various challenges and stresses of life. It is a proactive and holistic goal of health promotion, focusing on enhancing an individual's potential for a vibrant and fulfilling life rather than just focusing on the treatment of illness.

185. (A) Both A and R are true and R is the correct explanation of A.
Providing opportunities for learners to practice new skills is a vital part of effective health education. Simply knowing the facts is often not enough to change behavior; individuals need to develop the confidence and practical ability to apply that knowledge. Active practice, such as demonstrating handwashing or role-playing refusal skills, helps to reinforce the learning process. This hands-on approach makes the new behaviors more familiar and easier to integrate into daily life, increasing the likelihood they will be maintained long-term.

186. (B) Body composition
Body composition is a component of health-related fitness that refers to the proportion of different types of tissue in the body, specifically the ratio of fat mass to fat-free mass, which includes muscles and bones. It is a more precise indicator of health risk than body weight alone. A healthy body composition involves maintaining a low

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157. (C) Cancer and genetic mutations
The primary long-term health concern from radiation pollution, especially following nuclear accidents, is the increased risk of cancer and genetic mutations. High-energy radiation can damage the DNA within cells. If this damage is not repaired correctly, it can lead to uncontrolled cell growth and the development of tumors. Radiation can also cause mutations in reproductive cells, which may lead to health problems in future generations. Protecting against excessive radiation exposure is therefore a critical priority for environmental and public health.

158. (B) Regular intake is needed as they are excreted.
Water-soluble vitamins, which include Vitamin C and B-complex vitamins, are not stored in the body's fatty tissues in significant amounts. Instead, any excess of these vitamins is excreted through urine. Because the body does not maintain a large reserve, a regular and consistent intake of these vitamins through a healthy diet is necessary to prevent deficiencies. These vitamins are also more easily destroyed by heat and exposure to air during cooking compared to fat-soluble vitamins, which can be stored.

159. (D) Foster productive living without drugs.
The ultimate goal of a substance abuse rehabilitation program is to help individuals transition to a healthy, productive life without the need for drugs. While detoxification handles physical withdrawal, rehabilitation addresses psychological, social, and behavioral aspects of addiction. This involves providing counseling and developing coping strategies for life's challenges. By empowering the individual to function effectively in society and build meaningful relationships, rehabilitation aims for long-term sobriety and improved quality of life. This holistic support is essential for lasting recovery.

160. (A) Improve community health via prevention and care.
A key objective of any community health programme is to improve the overall health and well-being of the population it serves. This is achieved through a combination of preventive measures, such as immunizations and health education, and providing accessible medical care for existing conditions. By focusing on the specific needs of the community and promoting healthy behaviors, these programs aim to reduce the incidence of disease and enhance the quality of life for all community members, regardless of their background.

161. (A) Both A and R are true and R is the correct explanation of A.
School health services are an essential part of the overall school health programme because they provide the means for regular health monitoring of students. By conducting regular check-ups and screenings, health problems like vision issues can be detected early. Early identification allows for timely referral and treatment, preventing the condition from worsening and ensuring that health issues do not interfere with a child's academic performance and development. Therefore, these services are a critical investment in both student health and education.

162. (B) Reduced disease spread protects the unvaccinated.
Immunization contributes to herd immunity, also known as community immunity, by significantly reducing the number of people who can catch and spread a disease. When a large portion of a population is immune, the pathogen has fewer opportunities to transmit from person to person. This indirect protection is crucial for individuals who cannot be vaccinated due to medical reasons, such as severe allergies. Herd immunity helps to control and potentially eliminate infectious diseases within a given community through wide coverage.

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163. (C) Create a deficit by reducing energy intake.
In the context of weight control, the primary role of dieting is to manage the energy intake side of the energy balance equation. By consciously reducing the number of calories consumed through food and drink, an individual can create an energy deficit. This forces the body to utilize its stored energy reserves, mainly fat, to meet its metabolic and physical needs, resulting in weight loss. For long-term success, dieting should focus on nutrient-dense foods to ensure health while reducing energy intake.

164. (D) Cool with water and apply a loose dressing.
A second-degree burn is serious as it affects deeper layers of skin and results in blisters. The

infections in non-smokers, especially children. Therefore, while the non-smoker is not directly using tobacco, the environmental exposure to the smoke carries significant health risks, making smoke-free environments a critical public health priority for everyone.

135. (A) Having a predisposition to sickle cell anemia.
Sickle cell anemia is a clear example of the role of genetics in health, as it is an inherited blood disorder caused by a specific genetic mutation. An individual receives the genes for the condition from their biological parents. In contrast, conditions like lung cancer from smoking or hearing loss from loud noise are primarily caused by environmental factors. While genetics can influence many outcomes, disorders like sickle cell are directly determined by the biological blueprint an individual inherits at birth.

136. (C) A, B, C, and E only
A comprehensive health appraisal in a community health program involves several data-gathering activities. These include conducting surveys and questionnaires to understand health behaviors, screening for conditions like hypertension, and performing physical examinations on individuals. Analyzing community statistics like mortality rates is also a key part of the assessment process. Ignoring environmental conditions would be a failure of the appraisal, as environment is a critical determinant of health. These combined actions help create an accurate profile of the community's overall health needs.

137. (C) Cholera
Cholera is a classic example of a water-borne communicable disease caused by the bacterium Vibrio cholerae. It is typically transmitted through the consumption of water or food contaminated with the feces of an infected person. In areas with poor sanitation and lack of clean drinking water, cholera can spread rapidly, causing severe dehydration. Effective prevention of cholera focuses on ensuring safe water supplies, proper sewage disposal, and promoting good personal hygiene and handwashing practices in the community.

138. (B) A broken leg from a sports accident
Psychosomatic disorders are physical conditions where psychological factors like stress or anxiety play a primary role in causing or worsening symptoms. Tension headaches and Irritable Bowel Syndrome are examples where the mind-body link is strong. A broken leg, however, is a purely physical injury resulting from external trauma and is not caused by emotional or mental states. While stress might indirectly affect healing, the initial injury itself does not fall into the category of a psychosomatic disorder.

139. (D) Promote clotting and stop blood flow.
Applying direct pressure to a bleeding wound is a fundamental first-aid action aimed at stopping the flow of blood from damaged vessels. The pressure helps to slow down the circulation in the immediate area and provides necessary conditions for the body's natural clotting process to occur. Once a clot forms, it seals the wound and prevents further blood loss. This simple but effective technique is the first step in managing external bleeding and can be life-saving in severe cases.

140. (A) Transitioning to renewable energy sources.
Long-term preventive measures against pollution focus on addressing the root causes of environmental contamination. Transitioning to renewable energy sources like solar and wind power reduces the burning of fossil fuels, which is a major source of air and water pollution. Unlike short-term actions like wearing a mask, which only protect against immediate exposure, shifting to cleaner energy provides a sustainable solution that prevents pollutants from being released in the first place, leading to a healthier environment for everyone.

141. (C) Vitamin A
Night blindness, an inability to see clearly in low light, is a hallmark symptom of a deficiency in Vitamin A. This vitamin is essential for the health of the retina and the production of pigments needed for vision in dim conditions. Severe deficiency can also lead to more serious eye problems and increased susceptibility to infections. Consuming foods rich in Vitamin A, such as carrots and leafy greens, is crucial for maintaining good eye health and preventing this nutritional deficiency.

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172. (B) Binds to hemoglobin, causing oxygen deprivation.
Carbon monoxide is a colorless, odorless gas that is highly dangerous because it has a much higher affinity for hemoglobin than oxygen does. When inhaled, it binds to the hemoglobin in red blood cells, effectively blocking the transport of oxygen to the body's tissues and vital organs. This leads to oxygen deprivation, which can cause headaches, dizziness, and, in high concentrations, death. It is a major component of car exhaust and cigarette smoke, making it a serious public health concern.

173. (C) Optimal health from a balanced diet.
Malnutrition is a broad term used to describe any condition where the body does not receive the correct amount of nutrients. This includes undernutrition, such as kwashiorkor, and micronutrient deficiencies, like a lack of iron. It also encompasses overnutrition, which leads to being overweight. Therefore, malnutrition refers to an imbalance rather than a healthy state. Optimal health achieved through a balanced and varied diet is the opposite of malnutrition and is the fundamental goal of good nutritional practices for all.

174. (B) Alters the body's physical or mental function.
A drug is scientifically defined as any chemical substance that, when introduced into the body, alters its physical or mental function. This broad definition includes prescription medications, over-the-counter drugs, and illicit substances used recreationally. Not all drugs provide nutrients, and many have significant side effects or risks of addiction. The impact of a drug depends on its chemical properties, the dose taken, and the individual's unique biological makeup. Understanding this definition is fundamental to studying pharmacology and the overall health effects.

175. (D) Muscular endurance
Muscular endurance is a component of health-related physical fitness that refers to the ability of a muscle or a group of muscles to perform repeated contractions against a resistance over an extended period without becoming fatigued. This is different from muscular strength, which is the maximum force a muscle can exert in a single effort. Good muscular endurance is important for many daily activities and helps maintain posture and joint stability. It can be developed through activities like high-repetition weight training.

176. (B) P-2, Q-4, R-3, S-1
Different health agencies operate at various levels with specific mandates. The World Health Organization is the specialized international agency for global public health. In India, the ICMR is the national government body for biomedical research, while the CHEB is the national agency dedicated to health education. The Indian Red Cross Society is a major national voluntary health organization that provides humanitarian services. Understanding these roles is key to seeing how public health is managed both nationally and internationally for societal well-being.

177. (C) Physical symptoms caused or worsened by emotion.
A psychosomatic disorder is a real physical condition that is either directly caused or significantly exacerbated by psychological factors such as emotional stress or anxiety. These are not "imaginary" illnesses; the physical symptoms, such as stomach ulcers, are measurable. The term highlights the powerful connection between the mind and the body, where mental distress manifests as physiological problems. Management of these disorders often requires addressing both the physical symptoms and the underlying psychological triggers through various targeted therapies and stress reduction.

178. (B) It screens weight status and identifies health risk.
The Body Mass Index is a simple screening tool used to assess an individual's weight relative to their height. While it does not directly measure body fat percentage, it provides a useful way to categorize weight status as underweight, normal, overweight, or obese. This classification helps health professionals identify individuals who may be at a higher risk for lifestyle-related diseases like heart disease. BMI is a practical first step in evaluating overall health risk related to body weight in any population.

179. (D) Contact a poison control center or EMS.
If you suspect someone has ingested a poisonous substance, the most important and immediate step is to seek expert advice by contacting a

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long-term risks highlights the importance of moderation or abstinence from alcohol to protect brain health and overall cognitive function over a lifetime.

150. (D) Statement I is false, but Statement II is true.
Health-related physical fitness is distinct from skill-related fitness, which focuses on athletic abilities like speed and agility. The components of health-related fitness, such as cardiorespiratory endurance and muscular strength, are essential for maintaining the overall health and well-being of every individual. Achieving good levels in these areas helps prevent chronic lifestyle diseases and improves the quality of daily life. Therefore, while not everyone needs to be an elite athlete, everyone benefits from developing and maintaining health-related physical fitness.

151. (A) Ministry of Health and Family Welfare
The Ministry of Health and Family Welfare is the primary national government agency in India responsible for formulating and implementing health policies across the country. It oversees public health programs, medical education, and the delivery of healthcare services. While international organizations like the Red Cross play important roles in health, they are not national government agencies. The Ministry's work is essential for coordinating health initiatives and ensuring that public health priorities are addressed at a national level for all citizens.

152. (B) 1, 3, and 4
A healthful school environment is defined by physical and social characteristics that protect and promote student well-being. This includes adequate lighting and ventilation in classrooms to support focus, as well as safe drinking water and clean toilet facilities to prevent the spread of disease. Additionally, a supportive and positive psycho-social climate—where students feel safe and respected—is a critical component of a healthy learning environment. Overcrowding, in contrast, creates safety hazards and increases the transmission of communicable illnesses.

153. (C) A stroke
A stroke is a medical emergency that occurs when the blood supply to part of the brain is interrupted. Hallmark symptoms include a sudden onset of weakness or numbness, especially on one side of the face, arm, or leg. Difficulty speaking and sudden confusion are also common signs. Recognizing these symptoms quickly is critical, as early treatment can minimize brain damage and improve recovery. A stroke is often related to underlying conditions like hypertension and a sedentary lifestyle.

154. (B) Pathogen transmission vs. non-transmissible cause.
The fundamental difference between a communicable and a non-communicable disease lies in how they are caused and spread. Communicable diseases are caused by specific pathogens like bacteria or viruses and can be transmitted from person to person. Non-communicable diseases are not caused by infectious agents and cannot be spread between individuals. Instead, they result from a complex interaction of genetic, environmental, and lifestyle factors over time. Understanding this distinction is essential for developing appropriate public health strategies for prevention.

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155. (C) Dislocation - Bone displacement from a joint.
A dislocation is a serious common sports injury characterized by the complete displacement of a bone from its normal position in a joint. This often occurs due to a sudden impact and results in severe pain and a visible deformity. In contrast, a sprain involves ligament damage, and a strain involves muscle or tendon damage. A dislocation requires prompt medical attention to safely relocate the bone and check for any associated nerve or blood vessel damage that may have occurred.

156. (D) If the ingestion was recent and alert.
In cases of ingested non-corrosive poison, inducing vomiting is only recommended under specific circumstances and usually only when advised by a poison control center. If the person is alert and the ingestion happened very recently, removing the substance from the stomach might be beneficial. However, vomiting should never be induced if the person is unconscious or has swallowed a corrosive substance like a strong acid, as this could cause severe damage to the esophagus and lungs during the process.

percentage of body fat and a higher proportion of lean muscle mass. This balance is critical for metabolic health and reducing lifestyle disease risk.

187. (C) An organism that transmits a pathogen between hosts.
In the context of communicable diseases, a vector is an organism, often an insect or animal, that carries a disease-causing pathogen from one host to another without being sick itself. For example, mosquitoes are vectors for malaria, transmitting parasites between humans through their bites. Understanding how vectors work is essential for public health, as controlling the vector population through measures like spraying is often a highly effective strategy for preventing the spread of these diseases within a community or region.

188. (D) Thoroughly washing hands during food handling.
Thoroughly washing hands with soap and water during all stages of food handling is one of the most effective personal hygiene practices for preventing foodborne illnesses. This simple action removes harmful bacteria and viruses that may be on the hands and could be transferred to food. Other key practices include avoiding cross-contamination and ensuring food is cooked at proper temperatures. By maintaining good hygiene, individuals can significantly reduce the risk of spreading infections like salmonella through the food they prepare.

189. (C) Disrupted blood supply to the human brain.
A stroke is a serious medical condition characterized by a sudden disruption of the blood supply to part of the human brain. This can be caused by a blockage in an artery or by the rupture of a blood vessel. Without a continuous supply of oxygen and nutrients, brain cells in the affected area begin to die within minutes. This can lead to permanent brain damage and various physical and cognitive disabilities. Strokes are often associated with sedentary lifestyle factors and poor nutrition.

190. (B) It balances intake and expenditure to preserve muscle.
The combination of exercise and dieting is considered the gold standard for weight control because it addresses both sides of the energy balance equation while protecting structural health. While dieting alone creates a caloric deficit, it can lead to the loss of muscle mass. Physical activity, particularly strength training, helps to preserve and even build muscle while burning fat. This balanced approach ensures a healthy body composition, supports a higher metabolic rate, and improves overall cardiovascular and metabolic fitness during weight loss.

191. (D) Joint immobilization and prompt medical care.
A joint dislocation is a serious injury that occurs when bones are forced out of their normal alignment within a joint. The correct first-aid procedure is to immobilize the joint in the position it was found and seek prompt professional medical care. A first aider should never attempt to push the bone back into place, as this can cause severe damage to the joint capsule, nerves, and blood vessels. Medical professionals will use imaging to assess the damage and safely relocate the joint.

192. (A) Confusion, lethargy, and unconsciousness
Severe dehydration can lead to a state of shock, as the body does not have enough fluid to maintain adequate blood volume and pressure. In such cases, vital organs like the brain do not receive enough oxygenated blood, leading to symptoms such as confusion, extreme lethargy, and eventually loss of consciousness. Other signs include a rapid pulse and very little urine output. This is a medical emergency that requires immediate rehydration to restore normal physiological function and prevent organ failure.

193. (C) Chronic diseases result from long-term low exposure.
While high levels of pollution can cause immediate health crises, many of the most significant impacts result from long-term exposure to lower levels of contaminants. Over years, inhaling polluted air or consuming contaminated water can lead to the development of chronic conditions such as respiratory diseases, cardiovascular problems, and even certain types of cancer. These effects often go unnoticed until a serious illness is diagnosed. Protecting health requires ongoing efforts to minimize daily exposure to pollutants in our environment through regulations.

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239. (A) Drug abuse has severe negative health effects. The relationship between drug use and health is complex, but it is well-established that the abuse of drugs carries severe negative health consequences. Drug abuse can lead to various physical and mental health problems, including cardiovascular disease and impaired cognitive function. It also has a significant impact on an individual's social well-being and their relationships with family and community. Understanding these risks is a primary goal of health education, as it empowers individuals to make healthy decisions and avoid damage.

240. (A) Both A and R are true and R is the correct explanation of A.
The physical environment of a school is a critical component of the overall school health programme. A safe and hygienic environment—which includes access to clean drinking water and proper sanitation facilities—is essential for protecting students from communicable diseases and accidents. Beyond safety, a healthful environment also supports students' emotional well-being and creates a space that is conducive to learning. Therefore, investing in the maintenance of school infrastructure is a direct and effective way to promote student health.

241. (B) Enabling people to improve health control.
Health promotion is defined as the process of enabling people to increase control over their own health and its determinants, thereby improving their overall well-being. It is a proactive approach that goes beyond the treatment of disease to address the broader social and environmental factors that influence health. By providing individuals with the necessary information and resources, health promotion empowers them to make healthy choices and advocate for policies that support wellness. This holistic strategy is essential for public health.

242. (A) Can transmit pathogens unknowingly to others.
An asymptomatic carrier is a person who has been infected with a communicable disease but does not show any outward signs or symptoms of the illness. This individual is particularly dangerous to public health because they can unknowingly transmit the pathogen to others during their daily interactions. Carriers play a significant role in the spread of many infectious diseases, such as the common cold. Identifying and managing carriers through testing and education is an essential part of controlling disease outbreaks.

243. (C) Taking regular breaks to walk and stretch.
Preventing sedentary lifestyle diseases involves making conscious efforts to reduce long periods of inactivity. A practical and effective preventive measure is to take regular breaks from sitting to walk and stretch. This simple action helps to improve circulation and manage blood sugar levels. Combined with regular, more intense physical activity and a healthy, balanced diet, these small changes to daily habits can significantly lower an individual's risk of developing chronic health problems related to a lack of daily movement.

244. (D) It will remain relatively stable.
Body weight is primarily determined by the relationship between energy intake and energy expenditure. If an individual's energy intake from food and drink is consistently equal to the amount of energy their body uses for metabolic processes and physical activity, they are in a state of energy balance. In this condition, their body weight will remain relatively stable over time. Managing this balance is the fundamental principle of weight control, as even small consistent surpuses or deficits lead to changes.

245. (C) For deep burns or those on the face and hands.
While minor burns can often be managed with simple first aid, certain situations require immediate professional medical help. A first aider should call for emergency medical assistance if a burn appears to be deep, as in a third-degree burn, or if it covers a large area of the body. Burns on critical areas like the face, hands, or joints also require professional evaluation to prevent serious complications or scarring. Prompt medical care for severe burns is essential for recovery.

246. (B) Toxin concentrations rise up the food chain.
Bio-magnification is a process related to environmental pollution where the concentration of certain persistent toxins increases as they move up the food chain. This happens because some pollutants, like heavy metals, are not easily broken down or excreted by organisms. When small

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or sudden illnesses that occur on the school grounds. This ensures that students receive the necessary support to stabilize their condition until professional medical help arrives. These services also include regular health screenings and monitoring, all of which are designed to protect and promote the physical well-being and safety of the entire student population.

202. (B) P-2, Q-1, R-4, S-3
Understanding the terminology of infectious diseases is fundamental to public health. A pathogen is a microscopic organism that causes disease. A host is the organism, such as a human, in which the pathogen lives. An epidemic occurs when a disease spreads rapidly within a specific community beyond what is expected. A pandemic is a more widespread epidemic that has spread across multiple countries or continents. These terms help scientists and health officials track, communicate about, and respond to outbreaks.

203. (D) Psychosomatic response
Burnout resulting from chronic workplace stress is a classic example of how mental and emotional strain can manifest as physical health problems. The fatigue and headaches experienced are considered a psychosomatic response, where the psychological distress directly impacts the body's physiological state. While the symptoms are real and physically debilitating, the root cause lies in the emotional exhaustion of the environment. Addressing such issues requires both physical rest and psychological support to manage the underlying stressors and restore health.

204. (D) Increase awareness of intake and eating habits.
Keeping a food diary is a highly effective behavioral tool for individuals aiming to control their weight. Its primary purpose is to increase awareness of everything a person consumes and their overall eating habits. By recording what, when, and why they eat, individuals often identify patterns they were previously unaware of, such as emotional eating or consuming hidden calories. This increased self-awareness is the first step toward making conscious and healthy changes to their diet for management.

205. (C) A jagged and irregular cut or tear of skin.
In first aid and medical terms, a laceration refers specifically to a wound that results in a jagged and irregular cut or tear of the skin. This type of injury is often caused by blunt force trauma or contact with a rough object. Lacerations are different from incisions, which are clean, straight cuts. Because of their irregular edges, lacerations may be more difficult to clean and may require stitches to heal properly. Managing them involves cleaning and applying pressure.

206. (B) Evacuate the area and stay upwind from fumes.
In the event of a chemical spill, the immediate priority for preventing health effects from air pollution is to avoid inhaling potentially toxic fumes. The most effective safety measure is to evacuate the area quickly and move to a location that is upwind of the spill. Staying upwind ensures that any airborne chemicals are carried away from you by the breeze. It is critical to follow official instructions and not attempt to clean up the spill yourself for safety.

207. (D) Whole-wheat bread
Complex carbohydrates are composed of long chains of sugar molecules. Whole-wheat bread is an excellent source because it contains the entire grain, which also provides dietary fiber and essential vitamins. In contrast, simple carbohydrates like those found in table sugar and candy are quickly digested and provide only rapid energy without other nutritional benefits. Complex carbohydrates are digested more slowly, providing a steady and sustained energy supply, making them an essential part of a balanced and healthy daily diet.

208. (A) Iodine
Goitre is characterized by a significant swelling of the thyroid gland in the neck and is a visible sign of a deficiency in iodine. The thyroid gland uses iodine to produce hormones that are essential for regulating growth and the body's metabolic rate. When dietary iodine is insufficient, the gland enlarges in an effort to absorb as much as possible. This condition is easily preventable by consuming iodine-rich foods, such as seafood, or by using iodized salt in the diet.

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outlet for tension and improving mental well-being, regular exercise can reduce the frequency and severity of physical symptoms that manifest from emotional distress and psychological strain.

224. (A) Consuming 2800 kcal and expending 2300 kcal.
Body weight increases when an individual is in a state of positive energy balance, meaning they consume more calories than they expend. In this specific scenario, the person is taking in 2800 kcal while only burning 2300 kcal, resulting in a surplus of 500 kcal per day. The body stores this excess energy primarily as fat. To maintain weight, intake and expenditure must be equal, and to lose weight, a person must create a negative energy balance through diet or exercise.

225. (C) Brain
A concussion is a common type of sports injury that specifically affects the brain. It is caused by a blow or jolt to the head that causes the brain to move rapidly back and forth within the skull. This sudden movement can create chemical changes in the brain and sometimes damage brain cells. Symptoms of a concussion can include headache, confusion, and dizziness. While most concussions are not life-threatening, they require careful monitoring and rest for the brain to fully recover.

226. (B) Start CPR, beginning with chest compressions.
For an unconscious drowning victim who is not breathing, the immediate first-aid priority after removal from the water is to restore blood circulation and oxygenation through CPR. It is critical to begin with chest compressions. Trying to drain water from the lungs through other maneuvers is not recommended, as it is largely ineffective and can delay life-saving compressions. Seeking professional medical help immediately is also essential, even if the person begins to breathe, to check for any delayed respiratory issues.

227. (C) A, C, and D only
Long-term exposure to high levels of sound pollution has several significant negative impacts on human health. These include permanent hearing loss due to damage to inner ear structures, as well as chronic sleep disturbances. Furthermore, noise pollution acts as a persistent stressor that can lead to increased stress levels and hypertension. While it does not improve concentration or immune function, these other documented health issues highlight the importance of implementing noise control measures in urban environments to protect the public.

228. (A) Regulating temperature and nutrient transport.
Water is an essential component of the human body and performs several vital functions for survival. It plays a key role in regulating body temperature through processes like sweating. Water also acts as a primary transport medium, carrying oxygen and essential nutrients to the body's cells and helping to remove waste products through urine and perspiration. While water does not provide energy itself, it is necessary for all the biochemical reactions and physiological processes that do, making hydration critical for health.

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229. (C) Total calories and dietary protein intake.
Marasmus is a severe form of malnutrition that primarily affects infants and young children. It is caused by a profound and chronic deficiency in both total calories and dietary protein intake. This results in extreme wasting of the body, where the child appears very thin and has very little muscle or fat tissue. Unlike kwashiorkor, marasmus is a total energy deficiency. Prevention requires ensuring that infants have access to sufficient breast milk and appropriate complementary foods for healthy growth and development.

230. (B) Joining support groups and using coping skills.
Preventing relapse is a critical part of the long-term recovery process for someone who has suffered from alcoholism. Key strategies include joining support groups, where individuals can receive encouragement from others who face similar challenges. Additionally, developing and using healthy coping skills to manage stress without the use of alcohol is essential. Relapse prevention also involves making significant lifestyle changes, such as avoiding high-risk environments and building a strong, supportive network of family and friends to maintain lasting sobriety.

cooked to their proper internal temperature. Heat kills most harmful bacteria, such as salmonella and E. coli. Using a food thermometer is the most reliable way to check for doneness. Other critical measures include avoiding leaving perishable food at room temperature and ensuring that raw and cooked foods are handled separately to prevent cross-contamination. These habits are essential for maintaining food safety.

217. (C) Vitamin C
Scurvy is a nutritional deficiency disease caused by a severe and prolonged lack of Vitamin C in the diet. Vitamin C is essential for the synthesis of collagen, which is the main structural protein in connective tissues. Without it, the body begins to break down, leading to symptoms like bleeding gums and wounds that do not heal. Scurvy was once common among sailors who lacked fresh produce. It is easily prevented and treated by consuming foods rich in Vitamin C.

218. (B) Requiring larger doses to achieve the same effect.
Tolerance is a physiological phenomenon that occurs when a person's body becomes accustomed to the presence of a drug after repeated use. As a result, the initial dose of the drug no longer produces the same effect it once did. To experience the same physical or psychological impact, the user must consume increasingly larger amounts of the substance. Tolerance is a key component of drug dependence, as it often leads to a cycle of escalating use and increased risk.

219. (D) Biomedical model to a biopsychosocial model.
The World Health Organization's comprehensive definition of health represents a significant shift from a purely biomedical model. The older biomedical model focused primarily on the biological causes of disease and the physical body. In contrast, the modern biopsychosocial model recognizes that health is influenced by a complex interplay of biological, psychological, and social factors. This holistic approach is now the standard for public health, emphasizing that wellness requires addressing all aspects of an individual's life rather than just physical illness.

220. (A) Cardiorespiratory endurance
Cardiorespiratory endurance is the component of health-related physical fitness that describes the body's ability to perform moderate-to-high intensity exercise for prolonged periods. It is a measure of how effectively the heart and lungs work together to supply oxygenated blood to the muscles during physical activity. Good cardiorespiratory endurance is essential for cardiovascular health and is developed through aerobic activities. Maintaining high levels of this endurance significantly reduces the risk of chronic diseases and improves the body's overall functional capacity.

221. (D) Statement I is false, but Statement II is true.
A health appraisal is not a one-time event but a continuous part of any effective community health programme. Regular health appraisals are essential for monitoring changes in the health status of a population over time. They allow health professionals to identify new or emerging health problems and to evaluate whether the health interventions and programs currently in place are actually effective. This ongoing assessment process ensures that resources are used efficiently and that the program meets the evolving needs of the community.

222. (B) Pathogen exposure and the first symptom onset.
The incubation period of a communicable disease is defined as the time interval between the moment a person is exposed to a pathogen and the appearance of the first sign or symptom of the illness. During this period, the pathogen is multiplying within the body, but the individual may not yet feel sick. The length of this period varies significantly depending on the type of disease. Knowing the incubation period is crucial for identifying the source of an infection and management.

223. (D) Relieving stress and elevating the natural mood.
While exercise is not a cure for the psychological roots of a psychosomatic disorder, it plays a vital role in management by addressing the stress that triggers physical symptoms. Physical activity helps to lower levels of stress hormones and stimulates the production of endorphins, which are natural mood elevators. By providing a healthy

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209. (D) A is false but R is true.
The assertion that smokeless tobacco is a safe alternative to smoking is false. While it does not involve inhaling smoke, smokeless products like chewing tobacco contain nicotine, which is highly addictive, along with numerous carcinogenic chemicals. These substances are absorbed directly through the mouth's lining and have been definitively linked to an increased risk of various cancers, including those of the mouth and throat. Therefore, all forms of tobacco use carry severe and potentially life-threatening health risks.

210. (B) Creating a predisposition influenced by lifestyle.
The role of genetics in determining health is best understood as creating a biological blueprint or predisposition toward certain outcomes. While an individual may inherit a higher risk for conditions like heart disease, this is not a definitive sentence. Environmental factors and lifestyle choices—such as diet and exercise—can significantly influence whether these genetic risks ever manifest as actual disease. This interplay highlights that while we cannot change our genes, we can manage many aspects of our overall health.

211. (D) The Rockefeller Foundation (International Level)
The Rockefeller Foundation is a prominent private, non-governmental organization that operates at an international level to promote public health and well-being. It provides funding and expertise for various health initiatives worldwide, focusing on areas like disease control and medical education. Unlike national government agencies, which operate within a single country, the Rockefeller Foundation has a global reach, working with international partners and governments to address major health challenges that affect populations across multiple nations and regions.

212. (A) 1, 2, and 3 only
Immunization is a fundamental form of primary prevention, aimed at stopping diseases before they occur. It works by stimulating the body's immune system to produce its own antibodies, creating active immunity. By immunizing a significant portion of a population, it also helps to create herd immunity, which protects those who cannot be vaccinated. Immunization is specifically used for prevention rather than as a treatment for people who are already sick. These combined effects make it a successful public health tool.

213. (C) Artery narrowing, often due to atherosclerosis.
Coronary Artery Disease is a serious lifestyle-related condition that occurs when the major blood vessels that supply the heart muscle become narrowed or blocked. This is primarily caused by atherosclerosis, a process where fatty deposits called plaques build up on the inner walls of the arteries. As the arteries narrow, blood flow to the heart is reduced, which can lead to chest pain and heart attack. Managing risk factors like diet and exercise is crucial for prevention and long-term management.

214. (D) Attaining a healthy weight for height and build.
From a health and wellness perspective, the ultimate goal of body weight control is not about matching an aesthetic or achieving the lowest possible weight. Instead, it is about attaining and maintaining a weight that is healthy for an individual's specific height, age, and body build. A healthy weight reduces the risk of chronic lifestyle diseases and supports the optimal functioning of the heart and metabolic systems. This focus promotes long-term physical well-being and a better quality of life.

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215. (A) To prevent movement and reduce pain or damage.
In first aid for a suspected fracture, the main purpose of applying a splint is to immobilize the injured area completely. By preventing the bones from moving, a splint helps to reduce the severe pain that occurs when fractured ends shift. More importantly, it prevents further damage to surrounding tissues, such as nerves and blood vessels, which could be caused by sharp bone fragments. A splint stabilizes the injury and keeps it safe until professional medical treatment is received.

216. (B) Cooking meats to the proper internal temperature.
A primary and highly effective safety measure to prevent food poisoning is to ensure that meats are

231. (D) Biopsychosocial model
The biopsychosocial model is a modern health concept that recognizes that an individual's well-being is not determined by biological factors alone. Instead, it is influenced by a complex interplay of biological, psychological, and social factors. This means that genetics, emotional state, and social support systems all contribute to a person's health status. This holistic approach is essential for understanding and treating chronic diseases and for developing effective public health programs that address the diverse needs of a population.

232. (B) A lesson on the food pyramid and balanced diets.
In a school health program, health instructions refer specifically to the educational component designed to provide students with health-related knowledge. A clear example would be a lesson focused on the food pyramid and the importance of a balanced diet. This instruction empowers students to make healthy choices by helping them understand which nutrients their bodies need. Unlike physical services like vaccinations, health instructions focus on changing behaviors and fostering positive attitudes toward wellness through direct teaching and learning activities.

233. (C) P-3, Q-2, R-4, S-1
Different types of common sports injuries are characterized by the nature of the damage to tissues. An abrasion is a superficial scrape, while a contusion is a bruise caused by a blunt blow. A laceration is a deeper, jagged cut through the skin, often requiring more care to clean. A puncture wound is made by a sharp, pointed object and carries a high risk of deep-tissue infection. Correctly identifying the type of injury is essential for providing appropriate first aid.

234. (D) Calorie expenditure while the body is at rest.
The Basal Metabolic Rate is the total number of calories that an individual's body requires to perform its most basic, life-sustaining functions while at complete rest. These functions include breathing and blood circulation. BMR typically accounts for the largest portion of a person's total daily energy expenditure. It is influenced by factors such as age and muscle mass, as muscle tissue is more metabolically active than fat. Understanding BMR is essential for creating effective plans for body weight control.

235. (A) Use a cool dressing and seek medical help.
A third-degree burn is a severe medical emergency that damages all layers of the skin and may affect underlying tissues. The immediate first-aid priority is to cover the area with a clean, cool, and sterile dressing to protect it from contamination and then seek professional medical help immediately. It is critical not to use ice or home remedies, as these can cause further damage. Because nerve endings are often destroyed, the area may actually feel numb despite severity.

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236. (B) Provide a sugary drink or glucose tablets.
Hypoglycemia, or low blood sugar, is a common emergency for individuals with diabetes. If the person is conscious and able to swallow safely, the appropriate first-aid action is to provide a quick source of sugar, such as a sugary drink, to raise their blood sugar levels rapidly. It is important to avoid diet drinks, as they do not contain necessary sugar. After providing initial sugar, it is also advisable for the person to eat a substantial meal to stabilize levels.

237. (C) Limiting elective X-rays to necessity only.
Limiting exposure is a key principle for preventing health problems associated with radiation. While medical imaging is often necessary, choosing to limit elective X-rays to those that are truly required helps reduce an individual's cumulative radiation dose. Other important safety measures include using sunscreen to protect against UV radiation and following all safety protocols when working with radioactive materials. By being mindful of these exposures, individuals can significantly lower their long-term risk of developing serious radiation-related health issues.

238. (D) Vitamins A, D, E, and K
Vitamins are categorized as either water-soluble or fat-soluble based on how they are absorbed and stored. The fat-soluble vitamins include Vitamins A, D, E, and K. These vitamins are absorbed along with dietary fats and can be stored in the body's fatty tissues and liver for longer periods. This storage means that a person does not need to consume them every day, but it also means that excessive intake can potentially lead to toxic levels over time.

better health; individuals must be empowered to make informed decisions and take responsibility. This process encourages conscious, self-directed actions that effectively move a person along the health spectrum toward positive health.

255. (C) Comprehension
The principle of comprehension dictates that health information must be presented in a way that is understandable to the target audience. Using a local dialect and culturally relevant examples ensures the message is accessible. This clarity is essential for bridging the gap between receiving information and successfully adopting the desired health behaviors within a specific community or population group.

256. (B) Genetic predispositions are expressed and influenced by environmental conditions.
Health results from a complex interaction where genetics provides a foundational blueprint for an individual. This genetic potential is then expressed within an environmental context, including physical and economic factors. While genetics determines predispositions, the environment acts to either nurture or undermine these traits. Thus, optimal well-being depends on how external conditions influence an individual's inherent biological makeup.

257. (D) Body composition
Health-related physical fitness is focused on components essential for daily functioning and the prevention of chronic diseases. These components specifically include cardiovascular endurance, muscular strength, flexibility, and body composition. Unlike athletic skills or reaction time, which are performance-oriented, body composition directly impacts long-term health. Understanding these elements helps individuals manage their fitness levels to maintain overall physiological well-being.

258. (A) modifiable determinant of health.
Health-related physical fitness is considered a significant, modifiable determinant of health. While genetic factors set a baseline for potential, lifestyle choices and environmental factors largely determine the actual level of fitness achieved. Because fitness can be improved through regular activity and education, it serves as a key area where individuals can take conscious action to enhance their well-being.

259. (C) prioritize managing environmental factors and promoting fitness.
Public health strategies should adopt a holistic perspective that addresses both genetic predispositions and environmental conditions. Since the environment and physical fitness are modifiable factors, prioritizing these areas allows for effective interventions. By managing external risks and promoting active lifestyles, public health programs can help individuals reach their full health potential regardless of their inherent biological or genetic makeup.

260. (A) The environmental context influencing physical activity.
Building parks and walking trails addresses the environmental factors that influence physical activity levels within a community. Such infrastructure provides the context for individuals to realize their fitness potential. By improving the physical and social environment, these initiatives create opportunities for regular exercise. This demonstrates how modifying external surroundings can support healthier behaviors and improve the general population health.

261. (D) To protect and improve the health of a population group.
A community health programme is a coordinated effort to protect and improve the well-being of a specific population. It focuses on collective health outcomes rather than just individual treatments. By using systematic assessments and educational instructions, these initiatives address unique needs. The goal is to create a safe environment and promote behaviors that maintain health within the group.

262. (B) health appraisal.
Health appraisal is the systematic process used to determine the health status of a community or individual. This involves methods such as surveys, screenings, and medical examinations to identify specific problems and requirements. By gathering this data, health professionals can understand a population's needs. This assessment forms the foundation for designing targeted health education and interventions for everyone.

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animals consume these toxins and are then eaten by larger predators, the concentration becomes more and more concentrated at each successive level. This process can lead to dangerously high levels of pollutants in top predators, including humans.

247. (D) Consume a balanced and varied whole diet.
The most reliable and effective way for an individual to ensure they receive all necessary essential nutrients is to consume a balanced and varied diet composed primarily of whole foods. Natural foods like fruits, vegetables, and lean proteins provide a complex mix of vitamins, minerals, and other beneficial compounds that supplements cannot fully replicate. By choosing a wide variety of foods, a person can meet their nutritional requirements through their daily diet, supporting optimal health and preventing various lifestyle diseases.

248. (A) Headache
Caffeine is a widely consumed drug that acts as a stimulant to the central nervous system. When a person who regularly consumes caffeine suddenly stops or significantly reduces their intake, they can experience withdrawal symptoms as their body adjusts to its absence. A headache is one of the most common and classic symptoms of caffeine withdrawal. Other symptoms can include fatigue and irritability. While usually not serious, these symptoms highlight the physiological dependence that common substances can create over time.

249. (C) To perform surgery
The objectives of first aid are centered on providing immediate, life-saving support and stabilizing a victim until professional medical help arrives. These include preserving life, preventing the person's condition from getting worse, and promoting their overall recovery. A first aider is not expected or trained to perform complex medical procedures like surgery, which requires specialized equipment and professional training. Instead, the first aider's role is to provide the right initial care to bridge the gap and ensure the best possible medical outcome.

250. (C) 1, 2, and 4
Sedentary lifestyle diseases are non-communicable conditions that are strongly linked to a lack of regular physical activity and a poor diet. This group includes chronic problems like Type 2 diabetes and coronary heart disease, as well as physical issues such as postural problems and chronic back pain. These conditions develop over time due to the negative effects of inactivity on metabolic and musculoskeletal health. In contrast, influenza is a communicable respiratory disease caused by a virus and is not lifestyle-related.

251. (B) a dynamic continuum representing varying degrees of well-being.
The spectrum of health represents a dynamic continuum that encompasses various states beyond just being sick or well. It starts from positive health, which indicates optimal functioning, and stretches to the terminal stage or death. This model highlights that health is not a fixed state but a fluctuating level of physical, mental, and social well-being.

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252. (A) To encourage voluntary changes in behavior for better health.
Health education serves as a tool to bridge the gap between having medical information and applying healthy practices. Its primary significance is found in motivating people to change their behaviors voluntarily. By fostering these adjustments, individuals move toward the positive end of the health spectrum and take responsibility for their own long-term well-being and health outcomes.

253. (C) Coercion
Effective health education relies on several core principles like establishing credibility, encouraging participation, and ensuring information is comprehensible to the audience. Coercion is not one of these principles, as the process focuses on voluntary behavior changes. Methods like reinforcement and motivation are essential for helping individuals make informed and self-directed decisions regarding their personal and community health.

254. (D) Health education aims to connect information with practical application.
The core purpose of health education is to act as a bridge between possessing health information and implementing health practices. Having knowledge does not automatically result in

194. (B) 1, 2, and 3 only
A balanced diet is composed of nutrients that the body needs for energy, growth, and proper functioning. This includes the three macronutrients—carbohydrates, proteins, and fats—which are required in large amounts. It also includes the micronutrients, vitamins and minerals, which are needed in smaller quantities. Water is another essential component, as it is vital for almost all physiological processes. While artificial sweeteners are used in some diets, they are not a required nutritional component for fundamental health.

195. (C) Undernutrition
Undernutrition is a form of malnutrition that occurs when a person's dietary intake is consistently lower than what their body needs to maintain health. This results in a deficiency of energy, proteins, and other essential nutrients. Over time, undernutrition can lead to stunted growth, a weakened immune system, and impaired physical and mental development. It is particularly dangerous for children and pregnant women. Addressing undernutrition requires ensuring access to an adequate quantity and variety of nutritious foods.

196. (B) Permanent and irreversible destruction of lung tissue.
Long-term heavy smoking causes profound damage to the respiratory system, most notably emphysema, which involves the permanent and irreversible destruction of the lung's air sacs. These sacs, or alveoli, are where the exchange of oxygen and carbon dioxide takes place. As they are destroyed, the lungs lose their elasticity and their ability to function effectively, making it increasingly difficult to breathe. This damage cannot be repaired, emphasizing the importance of quitting smoking to prevent further deterioration of lung health.

197. (D) Detoxification
The first and most critical phase in a structured rehabilitation program for substance abuse is often detoxification. This medical process involves supervising the individual as they clear the addictive substance from their body and manage the physical and psychological withdrawal symptoms that occur. Detoxification ensures that the person is physically stable and safe before they move on to the next stages of rehabilitation, such as intensive counseling and therapy. Without successful detox, the individual remains physically dependent, making treatment less effective.

198. (A) Social
The ability to form and maintain satisfying interpersonal relationships is the hallmark of the social dimension of health. This dimension of well-being focuses on how an individual interacts with others and functions as a member of their community. Good social health involves having a reliable support network, communicating effectively, and feeling a sense of belonging and respect. It is an essential part of overall health, as positive social connections provide emotional support and are linked to improved physical outcomes.

199. (C) Communication
A health education program that uses posters, pamphlets, and mass media is primarily employing the principle of communication. This principle involves the effective dissemination of health-related information to a large and diverse audience. The goal is to raise awareness about important health issues and provide the basic knowledge needed for people to make healthy choices. While this approach is more one-way than participation, it is a vital first step in public health campaigns to reach people with essential messages.

200. (B) Flexibility
Flexibility is a component of health-related physical fitness that refers to the total range of motion available at a joint or group of joints. It is influenced by the elasticity of muscles and ligaments. Maintaining good flexibility is important for performing daily activities with ease, maintaining correct posture, and reducing the risk of injuries like muscle strains. Flexibility can be improved through regular stretching and activities like yoga. It is a key part of overall physical well-being.

201. (C) Providing emergency care and first aid for injury.
One of the primary and most critical functions of a school health service is to provide immediate emergency care and first aid for any injuries

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263. (C) Comprising a safe environment, health services, and health education.
The scope of a school health programme includes three major pillars: a safe environment, health services, and health education. It aims to protect students through regular check-ups, first aid, and a clean setting. By integrating health into the curriculum, schools help children develop foundational habits. This approach ensures that health is maintained within the collective institutional and school environment.

264. (D) prevent infectious diseases and maintain individual health.
Personal hygiene practices like handwashing and dental care are essential components of school health programs. These foundational behaviors are critical for preventing the spread of infectious diseases within the student body. By promoting individual cleanliness, the school protects the health of the entire community. This focus helps students take responsibility for their well-being while maintaining a healthy environment.

265. (A) The findings from health appraisal inform the content of health instruction.
In a community health setting, health appraisal and health instruction are closely linked. The systematic assessment of a population's needs provides specific data required to develop effective educational content. By identifying health problems through screenings or surveys first, instructors ensure that subsequent information is relevant and targeted. This sequence ensures that public health resources effectively address pressing community issues.

266. (B) Setting global health standards and coordinating pandemic responses.
International health agencies are responsible for establishing global standards and coordinating responses to cross-border health threats, such as pandemics. They provide technical and financial assistance to help member countries address various medical issues. By promoting universal health principles, these organizations ensure a unified approach to global wellness. Their role is vital for tackling problems requiring international collaboration.

267. (B) formulating and implementing national health policies.
National government health agencies derive their authority from legislation to manage a country's public health infrastructure. Their primary responsibilities include formulating health policies and implementing large-scale programs like disease surveillance and immunization drives. With a nationwide reach, these agencies ensure that health services are organized and accessible. They play a central role in maintaining the population's safety.

268. (A) They often exhibit flexibility and focus on specific populations.
Private health agencies are characterized by their flexibility and ability to innovate in healthcare delivery. Unlike government bodies that manage broad national policies, private entities often focus on specific diseases or marginalized groups. They fill essential gaps in the public sector through non-profit work or corporate initiatives. This agility allows them to pioneer new models for promotion and support.

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269. (C) Effective public health relies on the cooperation of diverse types of agencies.
A comprehensive public health ecosystem requires the combined efforts of international, national, government, and private agencies. Each type of organization brings unique strengths, such as the authority of government bodies or the flexibility of private entities. Cooperation among these diverse groups ensures all health needs are addressed. Synergy between different sectors is essential for creating a resilient healthcare landscape.

270. (D) A private agency
A non-profit organization targeting a remote or marginalized community exemplifies the specialized work of a private health agency. These agencies are often able to reach populations that might be underserved by broader government programs. Their flexible and innovative approach allows them to address specific local needs effectively. This type of intervention is a key part of the healthcare ecosystem.

271. (C) A specific pathogenic agent.
Communicable diseases are uniquely defined by the presence of a specific pathogenic agent, such

ii. Isotonic exercises involve constant muscle tension through a range of motion.
iii. Isokinetic exercises involve movement at a constant speed.
iv. Plyometric exercises are primarily used for developing maximum strength.
v. Circuit training is not an effective method for strength development.

Which of the above statements are correct?
(A) i, ii, and iii are correct.
(B) i, iii, and v are correct.
(C) ii, iv, and v are correct.
(D) i, ii, and iv are correct.

19. Which type of endurance is predominantly dependent on the body's aerobic energy system?
(A) Speed endurance
(B) Strength endurance
(C) Long-term endurance
(D) Short-term endurance

20. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The principle of specificity is fundamental to strength development.
Reason (R) : To improve strength in a particular muscle group or movement, the training must be specifically targeted to that muscle group or movement.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

21. A marathon runner's performance is primarily determined by which type of endurance?
(A) Anaerobic endurance
(B) Speed endurance
(C) Basic endurance
(D) Strength endurance

22. Which of the following is NOT a factor determining endurance capacity?
(A) VO_2 max
(B) Maximum voluntary contraction force
(C) Lactate threshold
(D) Muscle fiber composition

23. A training method for endurance development that involves continuous activity at a steady pace for a prolonged duration is known as:
(A) Interval training
(B) Fartlek training
(C) Repetition method
(D) Continuous method

24. Which of the following statements about speed is correct?
(A) Speed is the ability to perform a motor action in the minimum possible time.
(B) Speed is the ability to overcome external resistance.
(C) Speed is the range of motion in a joint.
(D) Speed is the ability to maintain a static position.

25. Match List I with List II concerning types of speed:
List I : (Type of Speed)
P. Reaction Speed
Q. Acceleration Speed
R. Locomotor Speed
S. Speed Endurance
List II : (Description)
1. Ability to maintain maximum speed over time
2. Time taken to respond to a stimulus
3. Ability to achieve maximum speed from a stationary position
4. Highest achievable running speed

Codes:
(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-1, S-3
(C) P-2, Q-3, R-4, S-1
(D) P-3, Q-2, R-4, S-1

26. From a biomechanical perspective, which of the following is a primary factor determining an athlete's speed?
(A) The ratio of fast-twitch to slow-twitch muscle fibers
(B) Emotional stability
(C) The ability to understand complex tactics
(D) The volume of oxygen consumed per minute

27. A sprinter practices starts from the blocks to improve her ability to reach top speed quickly. This type of training primarily targets which type of speed?

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280. (D) psychosomatic disorder.
When physical issues like headaches and stomach problems are linked to mental states such as work-related anxiety, the condition is classified as a psychosomatic disorder. This reflects the deep connection between emotional health and physical well-being. The symptoms are genuine physical experiences, driven by psychological stressors. Effective management usually involves addressing the mental and emotional sources of stress and tension.

281. (A) the relationship between calories consumed and calories expended.
Weight management is fundamentally based on the principle of energy balance. This concept describes the relationship between the calories an individual consumes through food and drink and the calories the body expends through metabolic processes and physical activity. To maintain or lose weight, one must manage this ratio. Achieving a negative energy balance is necessary for fat loss and prevention.

282. (B) It can lead to the loss of lean muscle mass.
While dieting is an effective way to reduce caloric intake for weight loss, it can have a specific disadvantage when used alone. Relying solely on calorie restriction without physical activity may lead to the loss of lean muscle mass along with body fat. Muscle is important for metabolic health and strength. Therefore, maintaining muscle tissue is key in weight management.

283. (B) To increase the number of calories expended.
Exercise plays a vital role in weight control by increasing the total number of calories the body expends. It balances the 'calories out' side of the energy equation, helping create a caloric deficit. Beyond weight loss, regular physical activity is essential for improving cardiovascular fitness and metabolic health. It also helps in preserving muscle tissue while targeting fat loss.

284. (A) It optimizes fat loss while preserving lean body mass.
Combining exercise with dieting is the most effective strategy for weight management because it optimizes fat loss while preserving lean body mass. This dual approach addresses both sides of the energy balance equation simultaneously. It provides comprehensive health benefits, such as improved cardiovascular fitness, that neither method achieves alone. Consequently, this combination leads to sustainable and successful long-term outcomes.

285. (C) reduce the risk of obesity-related health problems.
Effective weight management is significant because it helps reduce the risk of serious health conditions like hypertension, type 2 diabetes, and cardiovascular diseases. Obesity is linked to numerous long-term medical problems that diminish quality of life. By controlling body weight through energy balance, individuals improve their metabolic health. This proactive approach is essential for maintaining a high standard of well-being.

286. (D) To preserve life and prevent the condition from worsening.
The primary objective of first aid is to provide immediate and temporary care to a victim. This intervention aims to preserve life, prevent the person's condition from becoming worse, and promote eventual recovery. It is not intended to be a definitive medical cure or diagnosis. Instead, it serves as a critical bridge until professional medical help is available from physicians.

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287. (C) Assess the situation for any potential dangers.
Before approaching a victim at an accident scene, the responder must first assess the situation for any potential hazards. This principle ensures the safety of both the first-aider and the victim by identifying dangers like traffic or electrical risks. Only after confirming the environment is safe can the responder begin methodical interventions. Safety assessment is the foundation of emergency response.

288. (B) Severe bleeding
In cases of severe bleeding, applying direct pressure to the wound is the most critical first-aid intervention. This action helps to control blood loss and stabilize the victim until professional medical care arrives. While other priorities like airway and breathing are important, stopping hemorrhage is essential for preserving life. This methodical approach is a key part of managing injuries.

289. (D) Safely disconnecting the source of electricity.
When dealing with an electric shock victim, the most crucial initial step is to safely disconnect the power source. Responders must ensure they do not touch the victim while they are still in contact with the electricity to avoid becoming victims themselves. Once the source is disabled, they proceed with assessment and care. Safety measures are paramount in electrical emergencies.

290. (A) a combination of rest, ice, compression, and elevation.
For common sports injuries such as sprains, the standard first-aid treatment follows the RICE principle. This involves Rest to protect the injured area, Ice to reduce swelling, Compression to provide support, and Elevation to drain fluids. Following these steps helps manage pain and prevents further damage to tissues. This systematic approach promotes faster recovery for minor musculoskeletal injuries.

291. (C) Sound pollution
Sound pollution, which comes from excessive noise in urban and industrial environments, is linked to several adverse health effects. These include high levels of stress, sleep disturbances, and hypertension. Chronic exposure to loud noise can also lead to permanent hearing loss. Managing noise levels through green zones and personal protection is essential for maintaining cardiovascular health and general physiological well-being.

292. (A) The discharge of sewage and industrial effluents.
Water pollution is primarily caused by the discharge of harmful substances into water bodies. Common sources include industrial effluents, untreated sewage, and agricultural runoff. These contaminants can introduce infectious pathogens or toxic chemicals into the water supply. Such pollution leads to diseases like cholera and typhoid. Robust treatment systems and strict regulations are necessary to protect public health and safety.

293. (D) Cellular damage and genetic mutations.
Radiation pollution from sources like nuclear materials or specialized medical equipment can cause serious cellular damage. This damage often leads to long-term health issues such as cancer and genetic mutations. Unlike other forms of pollution that cause immediate infections or stress, radiation affects the body at a fundamental biological level. Stringent safety protocols are required to minimize exposure and health risks.

294. (B) Implementing stricter emission standards for vehicles.
Preventing air pollution requires a combination of regulatory and personal measures. Implementing stricter emission standards for industrial plants and motor vehicles is a primary strategy for reducing harmful pollutants. These regulations help lower the levels of substances linked to respiratory and cardiovascular diseases. Complementary actions, like using air purifiers, also help individuals mitigate their exposure to poor air quality.

295. (C) A combination of governmental regulation and individual action is necessary.
Protecting public health from the diverse threats of environmental pollution requires a multifaceted strategy. This involves a combination of governmental regulations, such as enforcing emission standards, and individual actions, like using water filters. Because pollution affects various media—air, water, and sound—unified efforts are necessary. Addressing these hazards is essential for preventing a wide range of chronic and infectious diseases.

296. (D) essential nutrients for growth, maintenance, and energy.
A balanced diet is crucial for health because it provides the essential nutrients the body needs to function correctly. These nutrients, which include macronutrients and micronutrients, are necessary for growth, tissue maintenance, and energy production. Without a proper balance of these components, the body cannot sustain itself. Proper nutrition forms the foundation for long-term physiological well-being and disease prevention.

297. (A) As a state encompassing both undernutrition and overnutrition.
The term malnutrition refers to a state of health resulting from an unbalanced intake of nutrients. It is a broad category that encompasses both undernutrition, which involves deficiencies in

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essential vitamins or minerals, and overnutrition, often characterized by excessive caloric intake leading to obesity. Understanding this definition helps public health professionals address a wide range of nutritional issues within various populations.

298. (B) cancer, respiratory, and cardiovascular diseases.
Smoking is a major cause of several serious, long-term health conditions. Its primary negative effects include various forms of cancer, as well as chronic respiratory and cardiovascular diseases. The harmful substances in tobacco smoke damage the lungs and heart, leading to impaired functioning and increased mortality. Prevention through education and policy is vital for reducing these avoidable health problems.

299. (B) They can be used to address specific deficiencies but not as a dietary substitute.
Nutritional supplements are intended to support health by correcting specific deficiencies in an individual's intake of vitamins or minerals. However, they should not be seen as a substitute for a balanced diet, which provides a complex array of nutrients and fiber. While useful in certain circumstances, their role is complementary. Maintaining healthy eating habits remains the primary way to achieve wellness.

300. (A) both prevention efforts and rehabilitation services.
A comprehensive public health strategy for addressing substance abuse must include both prevention and rehabilitation. Education and policy work to prevent individuals from starting the use of harmful drugs, alcohol, or tobacco. For those already affected, rehabilitation services are necessary to overcome dependency and address long-term health damage. This dual focus ensures that the problem is addressed effectively.

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CHAPTER 07
Sports Training

1. Which of the following is a core characteristic of sports training?
(A) It is a random and unstructured series of athletic activities.
(B) It is a systematic process of preparation for sport performance.
(C) It primarily focuses on the theoretical knowledge of sports.
(D) It is only concerned with managing the competition phase.

2. What is the process of physiological and psychological adjustment to a training stimulus called?
(A) Adaptation
(B) Overload
(C) Periodization
(D) Strategy

3. Read the following two statements and select the correct option:
Statement I : Training load is the quantitative aspect of work done in a training session.
Statement II : The intensity of the load is a key feature of training load.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

4. Which of the following best defines "overload" in the context of sports training?
(A) A state of optimal training stimulus that leads to positive adaptation.
(B) The process of identifying talented athletes for a specific sport.
(C) The final phase of a training cycle primarily focused on rest.
(D) A state caused by an imbalance between training and recovery.

5. Match List I with List II regarding the components of physical fitness:
List I : (Component)
P. Strength
Q. Endurance
R. Speed
S. Flexibility
List II : (Primary Characteristic)
1. Ability to perform a movement in minimum time
2. Ability to overcome resistance
3. Range of motion at a joint
4. Ability to sustain an activity
Codes:
(A) P-2, Q-4, R-1, S-3
(B) P-4, Q-2, R-3, S-1
(C) P-2, Q-1, R-4, S-3
(D) P-3, Q-4, R-1, S-2

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6. All of the following are principles of sports training EXCEPT:
(A) Principle of Progression
(B) Principle of Inconsistency
(C) Principle of Specificity
(D) Principle of Reversibility

7. A coach designs a training program that progressively increases the weight a lifter has to lift each week. This is a direct application of which principle of training load?
(A) Principle of recovery
(B) Principle of individualization
(C) Principle of variation
(D) Principle of systematic increase in load

8. Consider the following statements regarding the characteristics of sports training:
i. It is a planned and systematic process.
ii. The primary aim is performance enhancement.
iii. It is an educational process involving the athlete and coach.
iv. It is not based on scientific principles.
Which of the above statements are correct?
(A) i, ii, and iv are correct.
(B) i, ii, and iii are correct.

(C) ii, iii, and iv are correct.
(D) i, iii, and iv are correct.

9. Which of the following is a primary cause of training overload?
(A) Adequate rest and nutrition
(B) Gradual increase in training load
(C) Insufficient recovery between training sessions
(D) Following a periodized training plan

10. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The adaptation process in sports training is crucial for performance improvement.
Reason (R) : Adaptation is the body's response to adjust to the demands of a specific training load, leading to a higher level of function.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

11. Which type of strength is defined as the ability to overcome resistance with high speed?
(A) Maximum strength
(B) Strength endurance
(C) Static strength
(D) Explosive strength

12. Which of the following is an incorrect statement regarding the symptoms of overload?
(A) Persistent muscle soreness is a common symptom.
(B) An increased appetite and motivation for training.
(C) A decrease in performance is often observed.
(D) Sleep disturbances and irritability can occur.

13. An athlete experiencing chronic fatigue, decreased performance, and frequent illness is likely suffering from overload. What is the most appropriate initial remedial measure?
(A) Increase the intensity of training immediately.
(B) Change to a different sport entirely.
(C) Implement a period of active or passive recovery.
(D) Focus solely on strength training.

14. Identify the correct pair:
(A) Strength Endurance: Maximum force in a single contraction
(B) Explosive Strength: Ability to sustain force over time
(C) Static Strength: Force exerted during movement
(D) Maximum Strength: Highest force a muscle can exert

15. Match List I with List II regarding training periods:
List I : (Period)
P. Preparatory Period
Q. Competition Period
R. Transitional Period
S. General Preparatory Phase
List II : (Primary Objective)
1. Active recovery and regeneration
2. Maintaining and perfecting form for main events
3. Building a strong base of fitness
4. Developing all-round physical capacity
Codes:
(A) P-1, Q-2, R-4, S-3
(B) P-3, Q-2, R-1, S-4
(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-2, R-3, S-1

16. Which of the following is a key physiological factor determining an individual's strength?
(A) Joint flexibility
(B) Muscle cross-sectional area
(C) Cardiovascular efficiency
(D) Body fat percentage

17. The ability of the body to sustain a prolonged activity is defined as:
(A) Strength
(B) Endurance
(C) Speed
(D) Flexibility

18. Consider the following statements regarding strength development:
i. Isometric exercises involve muscle contraction without a change in muscle length.

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movement experiences, especially in youth.
(D) It is independent of the central nervous system's function.

38. Consider the following as types of coordinative abilities:
i. Orientation ability
ii. Balance ability
iii. Rhythm ability
iv. Reaction ability
v. Maximum strength ability
Which of the above statement(s) is/are correctly identified as coordinative abilities?
(A) i, ii, iii, and v
(B) i, iii, iv, and v
(C) ii, iii, iv, and v
(D) i, ii, iii, and iv

39. What is the fundamental difference between a 'technique' and a 'skill' in sports?
(A) Technique is the final goal of action, while skill is the primary method.
(B) Technique is an idealized method, while skill is applying it under performance conditions.
(C) These terms are considered synonymous across most professional sports.
(D) Technique relates to team sports, while skill relates to individual sports.

40. Arrange the typical stages of technique development in the correct chronological order:
I. Automation and mastery of the skill.
II. Development of basic coordination patterns (gross coordination).
III. Refinement of the technique (fine coordination).
IV. Stabilization and adaptation to varied conditions.
Which of the following is the correct sequence?
(A) II, III, I, IV
(B) I, II, III, IV
(C) II, III, IV, I
(D) III, II, I, IV

41. What is the primary importance of developing a sound technique in sports?
(A) It guarantees victory in every professional or amateur competition.
(B) It increases the aesthetic value and appeal of the performance.
(C) It ensures movement efficiency while reducing the risk of injury.
(D) It is only important for professionals, not amateur participants.

42. In which stage of technique development does a learner begin to refine the movement, correct errors, and perform with greater consistency?
(A) The fine coordination stage
(B) The initial cognitive stage
(C) The automation stage
(D) The regression stage

43. Which of the following distinguishes 'strategy' from 'tactics'?
(A) Tactics are a long-term plan, while strategy is an in-game decision.
(B) Strategy is used by players, while tactics are used by coaches.
(C) The terms strategy and tactics are synonymous in sports planning.
(D) Strategy is a long-term seasonal plan, while tactics are specific game actions.

44. A basketball team deciding to use a full-court press in the last two minutes of a close game is an example of:
(A) A long-term strategy
(B) A specific tactic
(C) A periodization plan
(D) A talent identification procedure

45. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Effective planning is indispensable in modern sports training.
Reason (R) : Planning provides a roadmap for achieving long-term goals by organizing training content, methods, and loads in a structured and purposeful manner.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

46. Which of the following is a key principle of planning in sports training?
(A) Rigidity and unwillingness to adapt

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(A) Reaction speed
(B) Movement speed
(C) Speed endurance
(D) Acceleration speed

28. Consider the following statements about flexibility:
i. Active flexibility is the range of movement achieved with external help.
ii. Passive flexibility is the range of movement achieved by an individual's own muscle action.
iii. Dynamic flexibility is the ability to perform movements with a large amplitude.
iv. Joint structure is a key factor determining flexibility.
Which of the above statement(s) is/are correct?
(A) i and ii are correct.
(B) iii and iv are correct.
(C) i and iv are correct.
(D) ii and iii are correct.

29. The ability to perform joint actions through a wide range of motion is known as:
(A) Coordination
(B) Agility
(C) Flexibility
(D) Balance

30. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The transitional period is an essential part of an annual training plan.
Reason (R) : It allows for psychological and physiological regeneration, preventing burnout and preparing the athlete for the next training cycle.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

31. Which of the following is NOT a type of flexibility?
(A) Explosive flexibility
(B) Active flexibility
(C) Passive flexibility
(D) Dynamic flexibility

32. Which of the following factors has the most significant influence on an individual's flexibility?
(A) Body weight
(B) Muscle temperature
(C) Ambient air temperature
(D) Blood type

33. A gymnast holding a split position on the floor for 30 seconds is demonstrating which type of flexibility?
(A) Dynamic-Active flexibility
(B) Static-Passive flexibility
(C) Ballistic flexibility
(D) Isokinetic flexibility

34. Which of the following is a characteristic of coordinative abilities?
(A) They are primarily dependent on the quality of motor control and regulation processes.
(B) They are determined solely by an athlete's maximum strength.
(C) They are synonymous with cardiovascular endurance.
(D) They are developed only through static stretching exercises.

35. The ability to maintain the body's center of gravity within the base of support is called:
(A) Rhythm ability
(B) Orientation ability
(C) Balance ability
(D) Reaction ability

36. An athlete's ability to quickly and accurately adjust their body position in space in response to a changing environment (e.g., a defender's movement) is an example of which coordinative ability?
(A) Kinesthetic differentiation ability
(B) Reaction ability
(C) Rhythm ability
(D) Adaptation ability

37. Which statement about the development of coordinative abilities is most accurate?
(A) It is most effective when training begins in adulthood.
(B) It is best developed by repeating a single, simple motor task.
(C) It benefits from exposure to a wide variety of

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as a virus, bacterium, or parasite. These infectious agents are responsible for the transmission of the illness between individuals or animals. While other factors might influence susceptibility, the disease itself cannot exist without the introduction of these harmful organisms or their toxic products into the host.

272. (B) stimulating the immune system to create immunity without causing the disease.
Immunization provides protection by introducing a vaccine that stimulates the body's immune system. This process triggers the production of antibodies and memory cells against a specific pathogen without causing the actual illness. It creates a state of long-term immunity, allowing the body to recognize and fight the disease in the future. This specific measure is highly effective for prevention.

273. (D) Promoting regular hand hygiene.
Preventing communicable diseases involves breaking the chain of transmission between an infectious agent and a host. Practices like promoting regular hand hygiene, ensuring safe drinking water, and controlling vectors like mosquitoes serve as barriers. These methods are distinct from medical interventions like immunization because they focus on environmental controls. Such measures are essential for reducing the overall risk of infection.

274. (A) It can help protect the entire community by reducing disease spread.
Immunization plays a critical role in community health by reducing the overall spread of diseases. When a significant portion of a population is vaccinated, it creates a phenomenon known as herd immunity. This protects not only the vaccinated individuals but also those who cannot be immunized. Consequently, high vaccination rates are a primary strategy for controlling outbreaks and maintaining safety.

275. (C) Vector control
Vector control is a preventive strategy focused on managing organisms that transmit diseases, such as mosquitoes. Distributing mosquito nets is a practical example of this approach, as it creates a physical barrier to prevent bites and infection. By reducing contact between people and vectors, the transmission cycle of diseases is interrupted. This significantly improves health outcomes for the entire community.

276. (A) It is a physical ailment caused or worsened by mental factors.
Psychosomatic disorders are real physical ailments triggered or worsened by mental and emotional factors like stress and anxiety. These conditions manifest as actual symptoms in various body systems, even though the underlying cause is psychological. Unlike imagined illnesses, they require a holistic approach to treatment. Addressing the mental conflict or emotional distress is essential for managing physical manifestations effectively.

277. (D) prolonged physical inactivity.
Sedentary lifestyle diseases are chronic conditions that primarily stem from a lack of regular physical activity. Prolonged inactivity, often combined with poor dietary choices, leads to the development of these health issues. Unlike illnesses caused by pathogens, these conditions develop gradually over time. Common examples include type 2 diabetes and cardiovascular disease, which are directly linked to daily physical habits.

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278. (B) Adoption of regular physical activity.
The cornerstone of preventing sedentary lifestyle diseases is the adoption of regular physical activity and a balanced diet. Because these conditions are caused by inactivity and poor nutrition, modifying one's lifestyle is the most effective intervention. Engaging in consistent exercise helps manage weight, blood pressure, and blood sugar levels. Proactive lifestyle changes are essential for reducing chronic health risks.

279. (C) a greater emphasis on proactive lifestyle modification.
Treating sedentary lifestyle diseases requires a different approach than managing communicable illnesses. While infectious diseases often involve breaking transmission chains, lifestyle conditions necessitate long-term, proactive modifications. This involves shifting focus from merely addressing immediate symptoms to managing the underlying causes through regular exercise and healthy eating. Personal responsibility and behavior change are central to successful management of these conditions.

(B) A focus on short-term gains over long-term development
(C) Exclusion of the athlete from the planning process
(D) Systematization and continuity

47. A coach preparing a detailed schedule for a single week of training is engaging in what type of planning?
(A) Microcycle planning
(B) Long-term perspective plan
(C) Macrocycle planning
(D) Quadrennial planning

48. Consider the following statements about planning in sports training:
i. It helps in optimizing the use of time and resources.
ii. It allows for the objective evaluation of progress.
iii. It should be flexible enough to accommodate unforeseen circumstances.
iv. It is only necessary for elite-level athletes.
Which of the above statements are correct?
(A) i, ii, and iii are correct.
(B) i, ii, and iv are correct.
(C) i, iii, and iv are correct.
(D) ii, iii, and iv are correct.

49. The systematic division of a training year into different periods and phases to peak for major competitions is known as:
(A) Strategy
(B) Periodization
(C) Technique training
(D) Talent identification

50. Match List I with List II regarding training plans of different durations:
List I : (Training Plan)
P. Session Plan
Q. Microcycle
R. Mesocycle
S. Macrocycle
List II : (Typical Duration)
1. Several months to a year
2. A single training unit
3. Several weeks to months
4. Approximately one week
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-4, R-3, S-1
(C) P-2, Q-3, R-4, S-1
(D) P-4, Q-2, R-1, S-3

51. What is the primary objective of periodization?
(A) To maintain a constant level of high performance all year.
(B) To focus exclusively on developing one fitness component at a time.
(C) To ensure the athlete peaks during the most important competitions.
(D) To minimize the total amount of training work an athlete completes.

52. A periodization plan that features one major competitive peak in a year is called:
(A) Double periodization
(B) Multiple periodization
(C) Linear periodization
(D) Single periodization

53. An athlete is in a phase of training characterized by high volume and low to moderate intensity, with a focus on building a general fitness base. Which period are they most likely in?
(A) Competition Period
(B) Transitional Period
(C) Preparatory Period
(D) Peaking Phase

54. Which of the following statements about the competition period is incorrect?
(A) The main goal is to maintain the fitness level achieved during the preparatory period.
(B) This period is used for developing basic, general physical qualities.
(C) Training volume is typically reduced, while intensity remains high or increases.
(D) The focus is on technique refinement and tactical preparation.

55. The transitional period in a training year is primarily for:
(A) Increasing training volume to its highest point.
(B) Competing in the most important events.
(C) Learning new and complex techniques for the first time.
(D) Psychological and physiological rest and recovery.

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56. Which type of competition is used to narrow down a field of competitors for a main event?
(A) Qualifying competition
(B) Main competition
(C) Preparatory competition
(D) Final competition

57. The systematic process of recognizing and selecting individuals who show potential for high-level performance in a specific sport is known as:
(A) Periodization
(B) Overload
(C) Talent identification
(D) Technique training

58. Consider the following steps involved in the process and procedure of talent identification:
i. Initial screening of a large population based on general physical attributes.
ii. Sport-specific testing to assess suitability for a particular sport.
iii. Observation of performance in training and competition.
iv. Psychological and social assessment of the athlete.
v. Immediate selection for the national team without further development.
Which of the above statement(s) is/are correctly identified as steps of the process?
(A) i, ii, and v
(B) ii, iii, and v
(C) i, ii, iii, and iv
(D) i, iii, and v

59. A national sports federation organizes a nationwide "try-out" for 12-year-old children, measuring their height, speed, and jumping ability. This is an example of which stage in the talent identification process?
(A) Talent selection
(B) Talent development
(C) Talent confirmation
(D) Initial detection or screening

60. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The principle of progression is vital for avoiding training plateaus.
Reason (R) : The body adapts to a given training load, and for further improvements to occur, the training stimulus must be gradually increased.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

61. What does the 'volume' of a training load refer to?
(A) The difficulty or quality of work performed.
(B) The rest interval between repetitions.
(C) The duration or quantity of work performed.
(D) The emotional stress of the workout.

62. Identify the incorrect pair regarding training load parameters:
(A) Intensity: Speed of running or weight lifted
(B) Volume: Total distance covered or total weight lifted
(C) Frequency: Number of training sessions in a given time
(D) Density: Frequency of training sessions per week

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63. The relationship between the work and rest phases in a training session refers to which feature of training load?
(A) Density
(B) Volume
(C) Intensity
(D) Specificity

64. Which of the following is the best remedial measure for an athlete showing early signs of overload, such as unusual fatigue after a normal workout?
(A) Increasing the protein intake and continuing the same training schedule.
(B) Introducing an extra rest day or reducing the volume of the next session.
(C) Ignoring the symptom and pushing harder to overcome it.
(D) Immediately starting a high-intensity interval training program.

65. The ability of a muscle to exert force repeatedly over a period of time is known as:
(A) Maximum strength
(B) Strength endurance

(C) Explosive strength
(D) Absolute strength

66. Pushing against an immovable wall is an example of which type of muscle contraction used in strength development?
(A) Isometric
(B) Isotonic
(C) Isokinetic
(D) Eccentric

67. Which of the following statements about factors determining strength is correct?
(A) Smaller muscles can always generate more force than larger muscles.
(B) The efficiency of neuromuscular coordination does not affect strength output.
(C) Psychological factors like motivation can influence the expression of strength.
(D) Slow-twitch muscle fibers are primarily responsible for generating high forces.

68. Consider the following methods for strength development:
i. Weight training
ii. Circuit training
iii. Plyometrics
iv. Static stretching
Which of the above are recognized methods for developing strength?
(A) i and ii only
(B) i, ii, and iv
(C) i, ii, and iii
(D) All i, ii, iii, and iv

69. Aerobic endurance is best defined as:
(A) The ability to perform high-intensity work for a short duration.
(B) The maximum force a muscle can generate.
(C) The body's ability to supply sufficient oxygen to the working muscles for an extended period.
(D) The ability to change direction quickly.

70. Which of the following is NOT a primary method for endurance development?
(A) Interval Method
(B) Isokinetic Method
(C) Continuous Method
(D) Fartlek Method

71. A training session that involves alternating periods of high-intensity work with periods of rest or low-intensity work is characteristic of:
(A) The continuous method
(B) The long slow distance (LSD) method
(C) The static stretching method
(D) The interval method

72. What is the primary characteristic of speed?
(A) The ability to cover a distance or perform a movement in a minimal amount of time.
(B) The ability to resist fatigue.
(C) The range of motion at a joint.
(D) The ability to overcome a large external resistance.

73. The time elapsed between a stimulus (e.g., a starter's gun) and the first initiation of movement is known as:
(A) Acceleration speed
(B) Movement speed
(C) Reaction speed
(D) Locomotor speed

74. A coach uses drills that require athletes to sprint short distances from various starting positions (lying down, seated, standing). This method is most effective for developing which type of speed?
(A) Acceleration speed
(B) Speed endurance
(C) Reaction speed
(D) Maximum speed

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75. Match List I with List II regarding the development of different fitness components:
List I : (Fitness Component)
P. Endurance
Q. Strength
R. Speed
S. Flexibility
List II : (Primary Training Method)
1. PNF Stretching
2. Plyometrics
3. Interval Training
4. Isotonic Contractions
Codes:
(A) P-3, Q-4, R-2, S-1
(B) P-4, Q-3, R-1, S-2
(C) P-3, Q-2, R-4, S-1
(D) P-1, Q-4, R-2, S-3

(D) A strategy

136. What is the most significant principle of planning in sports training?
(A) The plan must be based on scientific knowledge and best practices.
(B) The plan, once made, must never be changed.
(C) The plan should only focus on the athlete's physical weaknesses.
(D) The plan should be created without the athlete's input to maintain authority.

137. Which type of planning deals with the structure of training over a few weeks, typically 3-6, focusing on a specific training objective?
(A) Session Plan
(B) Microcycle
(C) Mesocycle
(D) Macrocycle

138. The primary objective of the "Competition" period is to:
(A) Achieve and maintain peak form for major events.
(B) Build a foundation of general fitness.
(C) Allow for complete rest and recovery.
(D) Experiment with new and unproven techniques.

139. A track and field athlete who competes in both an indoor season (winter) and an outdoor season (summer) would most likely use which type of periodization?
(A) Single periodization
(B) Triple periodization
(C) No periodization
(D) Double periodization

140. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The Preparatory period is often the longest period in an annual training plan.
Reason (R) : This period is crucial for establishing the physiological, technical, and psychological foundations upon which competitive success is built.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

141. The final phase of the Preparatory Period, which involves more sport-specific training at higher intensities, is known as the:
(A) General Preparatory Phase
(B) Transitional Phase
(C) Specific Preparatory Phase
(D) Competition Phase

142. What is a key procedure in talent identification?
(A) Selecting athletes based solely on their parents' sporting history.
(B) Choosing athletes who are currently the biggest and strongest, regardless of age.
(C) Focusing only on athletes from a specific geographic region.
(D) Using a battery of valid and reliable tests to assess relevant abilities.

143. Consider the following characteristics of sports training:
i. It is led by a coach or specialist.
ii. It is a process aimed at improving performance capacity.
iii. It is based on a planned and systematic approach.
iv. It only involves physical exertion.
Which of the above statement(s) is/are essential?
(A) i and iv
(B) ii and iii
(C) i, ii, and iii
(D) All of the above

144. One of the key features of a training load is its 'intensity'. How is intensity generally measured?
(A) By the total duration of the training session.
(B) By the quality or magnitude of the stimulus (e.g., speed, weight).
(C) By the number of training sessions per week.
(D) By the athlete's subjective feeling of tiredness after the session.

145. "Means and methods" of executing training load refer to:
(A) The goals and objectives of the training plan.
(B) The specific exercises, drills, and training

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energy expenditure for a given outcome.
Reason (R) : Efficient technique relies on outdated biomechanical principles and does not need to be updated.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

86. Which of the following objective of periodization focuses on avoiding the negative effects of excessive or poorly planned training?
(A) To optimize performance
(B) To manage fatigue and prevent overload
(C) To structure the training process
(D) To ensure peaking at the right time

87. A tennis player training for a season with two major tournaments would likely follow which type of periodization?
(A) Single periodization
(B) Non-periodization
(C) Constant periodization
(D) Double periodization

88. The main focus during the General Preparatory phase of the Preparatory Period is:
(A) Development of a broad, all-round fitness base.
(B) Sport-specific skills at high intensity.
(C) Tactical drills and competition simulation.
(D) Active rest and psychological recovery.

89. As an athlete moves from the Preparatory Period to the Competition Period, what is the typical change in training volume and intensity?
(A) Volume increases, Intensity increases.
(B) Volume increases, Intensity decreases.
(C) Volume decreases, Intensity increases.
(D) Volume decreases, Intensity decreases.

90. Which of the following is NOT a legitimate part of the talent identification and development process?
(A) Guaranteeing an athlete a place on a future Olympic team based on early results.
(B) Assessing anthropometric characteristics.
(C) Evaluating physiological capacities.
(D) Providing long-term training and support.

91. The adaptation process is governed by the principle of supercompensation. What does this mean?
(A) The body adapts by returning to its pre-training state.
(B) The body adapts by becoming weaker after training.
(C) The body adapts by losing all training effects during rest.
(D) The body adapts by rebuilding to a level higher than before the training stimulus.

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92. Which of the following is a symptom of psychological overload?
(A) Increased muscle strength
(B) Loss of motivation and concentration
(C) Improved sleep patterns
(D) Faster recovery times

93. Consider the following statements regarding the principles of training load:
i. The load must be progressive to ensure continuous adaptation.
ii. The load must be specific to the demands of the sport.
iii. The load must be individualized to the athlete's capacity.
iv. The load should remain constant throughout an athlete's career.
Which of the above statement(s) is/are correct?
(A) i, ii, and iv are correct.
(B) ii, iii, and iv are correct.
(C) i, ii, and iii are correct.
(D) i, iii, and iv are correct.

94. The ability to express maximal force in a single muscular contraction is:
(A) Strength endurance
(B) Explosive strength
(C) Relative strength
(D) Maximum strength

95. In the context of endurance, what does 'anaerobic' refer to?
(A) Energy production without the immediate use of oxygen.
(B) The presence of adequate oxygen.
(C) A low-intensity, long-duration activity.
(D) A state of complete rest.

76. Active flexibility is the range of motion one can achieve by:
(A) Using an external force like a partner or gravity.
(B) The contraction of the agonist and relaxation of the antagonist muscles.
(C) Holding a stretch for a prolonged period.
(D) Performing a series of bouncing movements.

77. Which statement about flexibility development is incorrect?
(A) Stretching is most effective when muscles are warm.
(B) Regular stretching can help reduce the risk of certain types of muscle injuries.
(C) Males are naturally more flexible than females on average.
(D) Flexibility tends to decrease with age if not actively maintained.

78. Consider the following statements regarding coordinative abilities:
i. They are the basis for learning and performing motor skills.
ii. They are heavily influenced by the central nervous system.
iii. They are developed through varied and complex motor tasks.
iv. Balance, rhythm, and differentiation are key types of coordinative abilities.
v. They are entirely genetically determined and cannot be trained.
Which of the above statements are correct?
(A) i, ii, and v
(B) i, ii, iii, and iv
(C) ii, iii, iv, and v
(D) i, iii, and v

79. A figure skater's ability to execute complex spins and jumps without falling is a high-level demonstration of:
(A) Balance and orientation abilities
(B) Maximum strength
(C) Aerobic endurance
(D) Passive flexibility

80. Arrange the following training cycles in chronological order from shortest to longest duration:
I. Macrocycle
II. Mesocycle
III. Training Session
IV. Microcycle
Which of the following is the correct sequence?
(A) III, IV, II, I
(B) III, II, IV, I
(C) IV, III, II, I
(D) II, IV, III, I

81. Which is the most appropriate definition of "technique training"?
(A) Training aimed specifically at improving an athlete's general physical fitness.
(B) Learning, refining, and automating an ideal model of motor action.
(C) A specific training method focused on outwitting a direct opponent.
(D) The part of training focused on rest and long-term psychological recovery.

82. In team sports, a pre-planned set of actions designed to counter an opponent's specific strengths is best described as:
(A) A tactic
(B) A skill
(C) A technique
(D) A training load

83. Which of the following is a primary importance of planning in sports?
(A) It eliminates the need for a coach during competitions.
(B) It makes the training process rigid and unchangeable.
(C) It ensures that training is objective-driven and progress can be monitored.
(D) It focuses only on the psychological aspects of sport.

84. The type of planning that outlines the goals and training for an entire Olympic cycle (4 years) is called:
(A) A microcycle plan
(B) A session plan
(C) A transitional plan
(D) A long-term perspective plan

85. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : A well-developed technique is crucial for high performance, as it minimizes

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(A) Muscle temperature
(B) Body weight
(C) Ambient air temperature
(D) Blood type

107. A gymnast holding a split position on the floor for 30 seconds is demonstrating which type of flexibility?
(A) Dynamic-Active flexibility
(B) Ballistic flexibility
(C) Isokinetic flexibility
(D) Static-Passive flexibility

108. Which of the following is a characteristic of coordinative abilities?
(A) They are determined solely by an athlete's maximum strength.
(B) They are primarily dependent on the quality of motor control and regulation processes.
(C) They are synonymous with cardiovascular endurance.
(D) They are developed only through static stretching exercises.

109. The ability to maintain the body's center of gravity within the base of support is called:
(A) Rhythm ability
(B) Orientation ability
(C) Balance ability
(D) Reaction ability

110. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Talent identification is a multi-stage process, not a one-time event.
Reason (R) : An athlete's potential develops over time and must be re-evaluated at different stages of maturation and training.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

111. What is the 'adaptation process' in sports training?
(A) The long-term physiological changes that occur in response to training stress.
(B) The immediate fatigue experienced during a workout.
(C) The strategic plan for an upcoming competition.
(D) The process of selecting talented athletes.

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112. Which statement correctly describes a principle of training load?
(A) Training loads should be increased randomly and sharply for best results.
(B) The principle of continuity suggests that training must be continuous to be effective.
(C) A specific training load will produce the exact same response in every athlete.
(D) Athletes should only use one type of training method to avoid confusion.

113. An athlete reports feeling constantly tired, has a higher resting heart rate, and their performance in training has declined for two weeks despite trying harder. These are classic symptoms of what condition?
(A) Supercompensation
(B) Overload
(C) Acute fatigue
(D) Peaking

114. Which of the following is a type of strength defined by the muscle's ability to contract and overcome resistance?
(A) Strength
(B) Flexibility
(C) Agility
(D) Endurance

115. A weightlifter performing a one-repetition maximum (1RM) squat is demonstrating:
(A) Strength endurance
(B) Explosive strength
(C) Maximum strength
(D) Static strength

116. A key factor determining strength that relates to the nervous system's ability to recruit motor units is:
(A) Muscle length
(B) Bone density
(C) Ligament elasticity
(D) Intra- and inter-muscular coordination

117. What is a primary characteristic of endurance?
(A) The ability to produce maximal force

instantaneously.
(B) The ability to move joints through a full range of motion.
(C) The ability to resist fatigue.
(D) The ability to react quickly to a stimulus.

118. Consider the following as potential types of endurance:
i. Aerobic endurance
ii. Anaerobic endurance
iii. Speed endurance
iv. Reaction endurance
Which of the above are correctly identified as types of endurance?
(A) i and ii only
(B) i, ii, and iii
(C) i, iii, and iv
(D) All are correct

119. A key factor determining an individual's endurance potential is their VO_2 max, which refers to:
(A) The maximum volume of blood the heart can pump per beat.
(B) The maximum amount of lactate that can accumulate in the blood.
(C) The maximum speed at which a person can run.
(D) The maximum rate at which the body can take up and use oxygen.

120. Arrange the following speed-related abilities in the typical sequence they occur during a 100m sprint:
I. Maintenance of maximum speed (Locomotor speed)
II. Response to the starter's gun (Reaction speed)
III. The first 30 meters from the blocks (Acceleration speed)
IV. Resisting deceleration in the final 20 meters (Speed endurance)
Which of the following is the correct sequence?
(A) II, III, I, IV
(B) I, II, III, IV
(C) II, I, III, IV
(D) III, II, I, IV

121. The "Fartlek" method of training, which involves 'speed play' with varied paces over varied terrain, is used for the development of:
(A) Maximum strength
(B) Reaction time
(C) Endurance
(D) Static flexibility

122. Which of the following is a target statement about speed as a motor ability?
(A) It is a complex ability influenced by strength, coordination, and neural factors.
(B) It is easily trainable and can be improved indefinitely.
(C) It is synonymous with endurance.
(D) It is best trained at the end of a long, tiring workout.

123. The ability to perform a single movement, such as a punch or a kick, in the shortest possible time is known as:
(A) Reaction speed
(B) Acceleration speed
(C) Speed endurance
(D) Movement speed

124. The development of speed is LEAST dependent on which of the following factors?
(A) Muscle fiber type (fast-twitch vs. slow-twitch)
(B) Maximum oxygen uptake (VO_2 max)
(C) Neuromuscular efficiency
(D) Technique and biomechanics

125. Match List I (Term) with List II (Description):
List I : (Term)
P. Overload
Q. Adaptation
R. Periodization
S. Technique
List II : (Description)
1. Ideal model of performing a movement
2. Positive physiological change due to training
3. State of excessive training stress with insufficient recovery
4. Planned variation of training volume and intensity
Codes:
(A) P-3, Q-2, R-4, S-1
(B) P-2, Q-3, R-1, S-4
(C) P-3, Q-4, R-2, S-1
(D) P-1, Q-2, R-4, S-3

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126. A ballet dancer performing a high kick is demonstrating a high level of which type of flexibility?
(A) Static-Passive
(B) Isometric
(C) Isokinetic
(D) Dynamic-Active

127. Which of the following is NOT a factor that determines or limits flexibility?
(A) The strength of the muscle
(B) The structure of the joint
(C) The elasticity of muscle tissue, tendons, and ligaments
(D) The temperature of the muscle and surrounding tissue

128. Consider the following statements describing the process of flexibility development:
i. Stretching should ideally be performed on cold muscles to be effective.
ii. PNF (Proprioceptive Neuromuscular Facilitation) is an advanced stretching technique.
iii. Ballistic (bouncing) stretching is widely recommended as the safest method.
iv. Holding a static stretch for 15-30 seconds is a common and effective method.
v. Flexibility gains are permanent and do not require maintenance.
Which of the above statement(s) is/are correct?
(A) i and iii
(B) ii and iv
(C) i, ii, and v
(D) ii, iv, and v

129. The ability to harmonize the movements of different body parts with each other and in relation to the environment is the core of:
(A) Strength endurance
(B) Coordinative abilities
(C) Maximum speed
(D) Passive flexibility

130. A basketball player dribbling the ball without looking at it, while simultaneously observing teammates and opponents, is heavily relying on which coordinative abilities?
(A) Orientation and Differentiation
(B) Balance and Rhythm
(C) Reaction and Balance
(D) Flexibility and Strength

131. Which of the following is an example of developing coordinative abilities?
(A) Lifting the heaviest possible weight for one repetition.
(B) Running on a treadmill at a constant speed for 60 minutes.
(C) Practicing juggling with balls of different sizes and weights.
(D) Holding a passive stretch for three minutes.

132. In the context of skill acquisition, what is a "skill"?
(A) The genetic potential or innate talent for a particular sport.
(B) The comprehensive theoretical knowledge regarding sport rules.
(C) The physical structure and measurements of a specific athlete.
(D) The ability to achieve a goal with maximum certainty and efficiency.

133. Which stage of technique development is characterized by the athlete being able to perform the skill correctly even under the pressure and variable conditions of a competition?
(A) The cognitive stage
(B) The associative stage (Fine coordination)
(C) The autonomous stage (Stabilization and adaptation)
(D) The initial learning stage

134. Which of the following is an incorrect statement about the relationship between technique and skill?
(A) A good technique is the foundation for a high-level skill.
(B) A person can have a skill without any underlying technique.
(C) Skill involves adapting a technique to a competitive situation.
(D) Technique training aims to make the motor pattern more efficient.

135. A football team's overall plan to play a possession-based game for the entire season is an example of:
(A) A tactic
(B) A skill
(C) A microcycle

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96. A 400-meter sprint primarily relies on which type of endurance?
(A) Long-term aerobic endurance
(B) Short-term anaerobic endurance
(C) Basic endurance
(D) Marathon endurance

97. Which of the following is a training method specifically designed to improve reaction speed?
(A) Long distance running
(B) Responding to unpredictable light or sound signals
(C) Heavy weight lifting
(D) Static stretching

98. Which of the following statements about speed development is incorrect?
(A) Long, slow distance running is the best way to improve maximum sprinting speed.
(B) It is highly dependent on genetic factors like muscle fiber type.
(C) Training should be conducted when the athlete is fresh, not fatigued.
(D) Improving strength and power can contribute to improved speed.

99. The range of motion available at a joint, with the assistance of an external force (like a partner), is called:
(A) Active flexibility
(B) Dynamic flexibility
(C) Passive flexibility
(D) Static-active flexibility

100. Match List I with List II concerning different types of abilities:
List I : (Ability)
P. Coordinative Ability
Q. Endurance
R. Strength
S. Speed
List II : (Example)
1. Lifting a heavy barbell
2. Running a marathon
3. Sprinting 100 meters
4. Dribbling a football while running
Codes:
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-1, S-3
(D) P-2, Q-4, R-1, S-3

101. The ability to control fine degrees of muscular force and movement timing, like in archery or shooting, is an example of which coordinative ability?
(A) Rhythm ability
(B) Balance ability
(C) Kinesthetic differentiation ability
(D) Reaction ability

102. An athlete who can perform a complex gymnastic routine fluidly and seemingly effortlessly is demonstrating a high level of which stage of technique development?
(A) The gross coordination stage
(B) The automation stage
(C) The technique stabilization stage
(D) The initial learning stage

103. Consider the following statements about tactics and strategy:
i. Strategy is the overall game plan.
ii. Tactics are the specific means to execute the strategy.
iii. A defensive formation in football is a tactic.
iv. Deciding to play a conservative season to avoid injuries is a strategy.
v. Tactics and strategy are completely independent of each other.
Which of the above statement(s) is/are correct?
(A) i, ii, and v
(B) i, ii, iii, and iv
(C) ii, iii, and v
(D) All are correct

104. Which of the following is NOT a type of planning in sports training?
(A) Retrospective Plan
(B) Macrocycle Plan
(C) Mesocycle Plan
(D) Microcycle Plan

105. Which of the following is NOT a type of flexibility?
(A) Active flexibility
(B) Passive flexibility
(C) Explosive flexibility
(D) Dynamic flexibility

106. Which of the following factors has the most significant influence on an individual's flexibility?

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modalities used.
(C) The timing of competitions in a season.
(D) The process of talent identification.

146. A swimmer finds their lap times are getting slower, they feel unusually moody, and they have lost their appetite. These are potential symptoms of:
(A) Overload
(B) Optimal adaptation
(C) The transitional period
(D) Peaking

147. A remedial measure for overload should prioritize:
(A) A significant increase in training intensity to break through the plateau.
(B) Ignoring the symptoms as they will likely resolve on their own.
(C) Balancing the relationship between training stress and recovery.
(D) Switching to a completely different sport.

148. Which of the following is an example of developing strength endurance?
(A) Lifting the heaviest possible weight for a single repetition.
(B) Running a 100-meter sprint.
(C) Holding a yoga pose for 60 seconds.
(D) Performing a maximum of 20 consecutive push-ups.

149. The development of strength is influenced by both morphological and neural factors. Which of the following is a neural factor?
(A) The cross-sectional area of the muscle.
(B) The number of muscle fibers.
(C) The recruitment and synchronization of motor units.
(D) The length of the muscle tendons.

150. Match List I with List II regarding primary training focus in periodization:
List I : (Periodization Phase)
P. General Preparatory
Q. Specific Preparatory
R. Pre-Competition
S. Main Competition
List II : (Primary Training Focus)
1. Sport-specific fitness and technique refinement
2. Tapering and peaking for the event
3. All-round physical development
4. Maintaining peak form and tactical execution
Codes:
(A) P-1, Q-3, R-2, S-4
(B) P-3, Q-1, R-2, S-4
(C) P-3, Q-2, R-1, S-4
(D) P-4, Q-1, R-2, S-3

151. What is the fundamental characteristic of endurance?
(A) The ability to exert maximum force.
(B) The ability to perform movements at high speed.
(C) The ability to move through a large range of motion.
(D) The ability to withstand fatigue.

152. Which of the following is an example of anaerobic endurance?
(A) A 200m swim
(B) A 10km run
(C) A 3-hour hike
(D) A game of chess

153. Consider the following statements regarding the development of endurance:
i. The continuous method involves uninterrupted work of long duration.
ii. The interval method alternates between high-intensity bouts and recovery periods.
iii. Fartlek training is highly structured with fixed work and rest intervals.
iv. To improve aerobic endurance, the heart rate must be elevated to a specific training zone.
v. Endurance training primarily develops fast-twitch muscle fibers.
Which of the above statement(s) is/are correct?
(A) i, ii, and iv
(B) ii, iii, and v
(C) i, iii, and v
(D) i, ii, and iii

154. Which type of speed is most critical for a goalkeeper in football?
(A) Reaction speed
(B) Locomotor speed
(C) Acceleration speed
(D) Speed endurance

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(B) Long-term monitoring and confirmation of potential within a program.
(C) A single performance result achieved during a one-time competition.
(D) A comprehensive genetic test to determine an athlete's predisposition.

242. The process of supercompensation, which is central to the adaptation process, requires a balance between:
(A) Training stimulus and Recovery
(B) Strength and Speed
(C) Technique and Tactics
(D) Volume and Density

243. The "density" of a training load refers to:
(A) The total amount of work done.
(B) The difficulty of the work done.
(C) The time relationship between the work and rest intervals.
(D) The frequency of training sessions per year.

244. Which of the following is a primary characteristic of strength?
(A) The ability to resist fatigue
(B) The ability to move quickly
(C) The ability to move through a range of motion
(D) The ability to generate force

245. Which of the following is a characteristic of long-term endurance?
(A) Relies heavily on the anaerobic energy system.
(B) Is crucial for events like weightlifting.
(C) Is characterized by the body's ability to maintain a state of oxygen balance.
(D) Lasts for less than 2 minutes.

246. Which of the following is NOT a type of speed mentioned in sports training?
(A) Reaction Speed
(B) Absolute Speed
(C) Acceleration Speed
(D) Movement Speed

247. To improve flexibility, stretching exercises should be a part of the:
(A) Main competitive event
(B) Rest day only
(C) Pre-season only
(D) Warm-up and cool-down

248. The development of coordinative abilities is fundamentally linked to the development of the:
(A) Central nervous system
(B) Cardiovascular system
(C) Muscular system
(D) Endocrine system

249. "Skill" in sport is best described as:
(A) A perfect, unchangeable motor program.
(B) The innate, genetic talent for a sport.
(C) The learned ability to bring about a predetermined result with maximum certainty.
(D) The physical size and shape of an athlete.

250. The period of a training year that is dedicated to physical and psychological recovery is the:
(A) Transitional Period
(B) Preparatory Period
(C) Competition Period
(D) Pre-competition Period

Direction : Please read the following source carefully.

Sports training is a scientifically grounded, pedagogically organized process of preparation for athletic performance, designed to be systematic and goal-oriented. A core characteristic of effective training is its individualization, tailoring the program to the athlete's specific needs, capabilities, and recovery patterns. The entire process is governed by fundamental principles, including the principle of continuity, which dictates the necessity of uninterrupted training sessions to avoid de-training, and the principle of progressive overload, which ensures that the training stimulus is gradually increased to elicit further adaptation. Central to this process is the concept of training load, which represents the total physiological and psychological stress placed upon an athlete during a workout. The features of training load are quantifiable through variables like volume (the total amount of work), intensity (the quality or difficulty of work), frequency (the number of training sessions), and density (the relationship between work and rest periods). The body's response to this load is an adaptation process, whereby physiological systems enhance their functional capacity to better handle future

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(D) A skill

166. A coach writing down the objectives, content, and duration for tomorrow's training session is creating a:
(A) Macrocycle plan
(B) Session plan
(C) Mesocycle plan
(D) Long-term perspective plan

167. Which of the following is a key objective of periodization?
(A) To keep training volume and intensity constant throughout the year.
(B) To focus on a single fitness component while ignoring others.
(C) To eliminate the need for recovery periods.
(D) To systematically manage training for timely peaks in performance.

168. Consider the following types of periodization based on the number of competitive peaks in a year:
i. Single Periodization
ii. Double Periodization
iii. Multiple Periodization
iv. Reverse Periodization
Which of the above statement(s) is/are correct?
(A) i and ii only
(B) i, ii, and iii
(C) i, iii, and iv
(D) ii and iv only

169. What is the main purpose of the Transitional Period?
(A) To engage in high-intensity, competition-specific training.
(B) To build the initial foundation of general physical fitness.
(C) To provide active rest, allowing for physical and psychological recovery.
(D) To compete in the most important championships of the year.

170. A competition that is not the main goal but is used as part of the preparation to gauge progress and practice competitive skills is known as:
(A) A preparatory competition
(B) A qualifying competition
(C) The Olympic Games
(D) The final championship

171. In talent identification, assessing a young athlete's "trainability" or response to a training program is part of which procedural step?
(A) Initial screening
(B) Final selection
(C) Anthropometric measurement only
(D) Talent development and monitoring

172. The principle of 'individuality' in sports training implies that:
(A) All athletes should follow the exact same training program.
(B) Athletes respond differently to the same training stimulus.
(C) Only individual sports require specific training.
(D) Team sports do not require individualized attention.

173. What are the two primary components that define the magnitude of a training load?
(A) Speed and Flexibility
(B) Technique and Tactics
(C) Volume and Intensity
(D) Planning and Periodization

174. Which of the following is NOT a common cause of overload?
(A) Too rapid increase in training volume or intensity.
(B) Insufficient time for rest and regeneration.
(C) Monotony in training.
(D) A well-structured tapering period before competition.

175. The ability of the neuromuscular system to overcome resistance with the highest possible speed is:
(A) Explosive strength
(B) Maximum strength
(C) Strength endurance
(D) Static strength

176. Which factor is a primary determinant of maximum strength?
(A) Flexibility of the joints
(B) Cross-sectional area of the muscle
(C) Coordination ability
(D) Aerobic capacity

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220. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The development of coordinative abilities is most effective during childhood and adolescence.
Reason (R) : The central nervous system exhibits high plasticity during these developmental years, making it more receptive to learning complex motor patterns.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

221. Which of the following best defines Speed Endurance?
(A) The ability to react to a stimulus as quickly as possible.
(B) The ability to achieve maximum speed from a stationary start.
(C) The ability to maintain near-maximum speed for an extended duration.
(D) The ability to run for many hours at a slow pace.

222. An athlete's ability to stretch their hamstring by grabbing their foot and pulling their leg towards their chest is an example of what kind of flexibility?
(A) Dynamic-Active
(B) Ballistic
(C) Static-Active
(D) Static-Passive

223. The ability to perceive the position of one's body parts in space without visual cues is a part of:
(A) Kinesthetic differentiation ability
(B) Maximum strength
(C) Aerobic capacity
(D) Speed endurance

224. Which of the following identifies the relationship between technique, skill, and tactics?
(A) Technique is the seasonal plan, skill is the physical action, and tactics are the tools.
(B) Technique is movement, skill is its application, and tactics are the game plan.
(C) Tactics are the movement, skill is the plan, and technique is the application.
(D) They are all independent concepts with no functional relationship to one another.

225. A training plan for a period of one week is referred to as a:
(A) Mesocycle
(B) Microcycle
(C) Macrocycle
(D) Session plan

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226. In a periodized plan, when is the training volume typically at its highest?
(A) During the General Preparatory Period
(B) During the Competition Period
(C) During the Transitional Period
(D) On the day of the main competition

227. A training plan for a boxer that aims for them to be in peak condition for three separate title fights over the course of a year would likely use:
(A) Single periodization
(B) Double periodization
(C) Multiple periodization
(D) Reverse periodization

228. Consider the following elements of a talent identification process:
i. Assessment of physical and physiological characteristics.
ii. Evaluation of technical skill potential and 'trainability'.
iii. Consideration of psychological factors like motivation and resilience.
iv. Analysis of the athlete's hereditary background.
v. Immediate financial reward for participation.
Which of the above statement(s) is/are correctly identified as elements of the process?
(A) i, ii, and v
(B) i, ii, iii, and iv
(C) ii, iv, and v
(D) All are crucial

229. The principle stating that training effects are reversible and will be lost if training stops is the principle of:
(A) Progression
(B) Specificity
(C) Reversibility

muscle length.
(B) Muscle contraction at a constant speed of movement.
(C) A complete lack of muscle contraction.
(D) Muscle contraction with a change in muscle length against a constant resistance.

188. Long-term endurance (aerobic) is primarily limited by the capacity of the:
(A) Muscular system to produce force
(B) Cardiorespiratory system to transport oxygen
(C) Nervous system to react quickly
(D) Skeletal system to bear weight

189. The development of which physical quality is most constrained by genetic factors?
(A) Endurance
(B) Flexibility
(C) Speed
(D) Strength Endurance

190. A person holding a yoga pose without any support is demonstrating:
(A) Static-Passive flexibility
(B) Dynamic-Active flexibility
(C) Dynamic-Passive flexibility
(D) Static-Active flexibility

191. A gymnast performing on the balance beam exhibits a high level of which specific coordinative ability?
(A) Balance ability
(B) Reaction ability
(C) Rhythm ability
(D) Differentiation ability

192. The stage of technique development where the learner has a basic idea of the movement but performs it inefficiently and with many errors is the:
(A) Automation stage
(B) Gross coordination stage
(C) Fine coordination stage
(D) Mastery stage

193. Consider the following statements regarding Periodization:
i. It is the division of a training plan into smaller, manageable phases.
ii. The three main periods are Preparatory, Competition, and Transitional.
iii. It aims to achieve peak performance at a specific time.
iv. It involves keeping training intensity and volume constant.
Which of the above statement(s) is/are correct?
(A) i, ii, and iii
(B) i, iii, and iv
(C) ii, iii, and iv
(D) i, ii, and iv

194. The process by which the body grows stronger and more efficient in response to the stress of training is called:
(A) Adaptation
(B) Overload
(C) Fatigue
(D) Detraining

195. Which of the following is NOT a primary feature of training load?
(A) Volume
(B) Intensity
(C) Uniformity
(D) Density

196. The "Principle of Specificity" in sports training means:
(A) Every athlete should have a very specific diet plan.
(B) Training sessions should be specifically long.
(C) Athletes should specialize in a sport at a very early age.
(D) Training must be specific to the goals of the athlete and the demands of the sport.

197. Which of the following is a psychological symptom of overload?
(A) Increased performance
(B) Decreased resting heart rate
(C) Irritability and mood swings
(D) Faster recovery

198. Plyometric exercises are primarily used for the development of:
(A) Static strength
(B) Explosive strength and power
(C) Aerobic endurance
(D) Flexibility

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155. Which of the following is an incorrect statement about factors determining speed?
(A) A higher proportion of fast-twitch muscle fibers is advantageous for speed.
(B) Good flexibility can contribute to a longer stride length, improving speed.
(C) The efficiency of the central nervous system in sending signals to muscles is crucial.
(D) High levels of aerobic endurance are the primary determinant of sprinting speed.

156. The use of plyometric exercises, such as box jumps, is a common method for developing which type of speed-related ability?
(A) Reaction speed
(B) Explosive power, which is critical for acceleration
(C) Static balance
(D) Aerobic endurance

157. Which type of flexibility is demonstrated when a person performs a full squat?
(A) Passive flexibility
(B) Static-active flexibility
(C) Dynamic flexibility
(D) Ballistic flexibility

158. Which of the following factors is least likely to influence a person's flexibility?
(A) Age and gender
(B) Joint structure
(C) Muscle and fat mass
(D) Blood cholesterol level

159. PNF (Proprioceptive Neuromuscular Facilitation) stretching techniques involve:
(A) A combination of passive stretching and isometric contractions.
(B) A continuous, slow run.
(C) A series of bouncing movements to stretch the muscle.
(D) Holding a stretch for a very short period (1-2 seconds).

160. Arrange the following processes/individuals in the logical order of a talent development pathway:
I. National Team Member
II. School-level participant in a "Talent Search" program
III. Club/Academy Athlete receiving specialized training
IV. Recreational sports player in the community
Which of the following is the correct sequence?
(A) IV, II, III, I
(B) II, IV, I, III
(C) IV, III, II, I
(D) I, III, II, IV

161. A dancer's ability to perform a sequence of steps in perfect time with the music is a display of which coordinative ability?
(A) Balance ability
(B) Rhythm ability
(C) Reaction ability
(D) Orientation ability

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162. How are coordinative abilities best developed?
(A) By increasing the complexity and novelty of motor tasks.
(B) By repeatedly performing one simple, mastered skill.
(C) By focusing solely on building maximum strength.
(D) Through long-duration, low-intensity aerobic exercise.

163. What is the key difference between the concept of a 'technique' and a 'skill'?
(A) Technique is theoretical; skill is practical.
(B) Technique is for individual sports; skill is for team sports.
(C) Technique is the movement pattern, while skill is applying it successfully.
(D) There is no significant difference.

164. A young basketball player who is just learning how to shoot and makes many inconsistent movements is in which stage of technique development?
(A) The automation stage
(B) The stage of fine coordination
(C) The elite performance stage
(D) The stage of gross coordination (initial learning)

165. A specific, pre-arranged play in American football designed to exploit a defensive weakness is a clear example of:
(A) A strategy
(B) A technique
(C) A tactic

(C) The physical fitness of the players.
(D) The rules of the game.

210. Arrange the periods of a standard single periodization plan in chronological order:
I. Competition
II. Transitional
III. Preparatory
Which of the following is the correct sequence?
(A) I, II, III
(B) III, I, II
(C) II, III, I
(D) III, II, I

211. Which type of planning has the shortest time frame in sports training?
(A) Macrocycle
(B) Mesocycle
(C) Session Plan
(D) Microcycle

212. What is the primary objective of the preparatory period in a periodized training plan?
(A) To achieve peak performance for the main competition.
(B) To provide rest and recovery after a long season.
(C) To compete in as many minor competitions as possible.
(D) To develop the physical, technical, and psychological base for the upcoming season.

213. The transitional period should not involve:
(A) Active rest and recreational activities.
(B) Psychological relaxation.
(C) Complete inactivity for a prolonged duration.
(D) Low-intensity general fitness activities.

214. The procedure of talent identification aims to:
(A) Select the best team for a single, immediate match.
(B) Predict future success in a sport based on current attributes and potential.
(C) Provide remedial training for athletes in a slump.
(D) Design nutritional plans for professional athletes.

215. One of the core principles of sports training is that for training to be effective, it must be a continuous process. This is the principle of:
(A) Specificity
(B) Overload
(C) Individualization
(D) Continuity

216. Read the following two statements and choose the correct option:
Statement I : Training load is the workload placed on an athlete during a training session.
Statement II : Adaptation occurs when the training load is insufficient to stimulate a response.
(A) Statement I is true, but Statement II is false.
(B) Statement I is false, but Statement II is true.
(C) Both Statement I and Statement II are true.
(D) Both Statement I and Statement II are false.

217. Persistent fatigue, performance decrements, and hormonal disturbances are signs of:
(A) Successful adaptation
(B) The peaking phase
(C) Chronic overload or overtraining syndrome
(D) The transitional period

218. Consider the following statements regarding strength:
i. It is the ability to overcome resistance.
ii. It can be categorized into maximum, explosive, and endurance types.
iii. Muscle cross-sectional area is a key determining factor.
iv. It can be developed through methods like isotonic and isometric training.
Which of the above statements are correct?
(A) i and ii only
(B) i, ii, and iii only
(C) i, iii, and iv only
(D) All i, ii, iii, and iv are correct.

219. The ability to perform an activity of high intensity where energy is supplied through non-oxidative pathways is called:
(A) Aerobic endurance
(B) Basic endurance
(C) Static endurance
(D) Anaerobic endurance

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177. Circuit training, where an athlete moves from one exercise to another with minimal rest, is an effective method for developing:
(A) Maximum strength primarily
(B) General endurance and strength endurance
(C) Reaction time
(D) Passive flexibility

178. Consider the following statements regarding endurance:
i. It is the ability to resist fatigue.
ii. It can be classified into aerobic and anaerobic types.
iii. VO_2 max is a key physiological determinant of aerobic endurance.
iv. It is solely determined by an athlete's mental toughness.
v. Long-distance running is a classic example of an endurance activity.
Which of the above statement(s) is/are correct?
(A) i, iv, and v
(B) i, ii, iii, and v
(C) ii, iii, and iv
(D) All are correct

179. A coach designs a workout of 10x400m runs with a specific rest interval between each run. This is an application of which endurance development method?
(A) Continuous method
(B) Fartlek method
(C) Interval method
(D) Static method

180. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Speed is a highly specific motor ability.
Reason (R) : An athlete who is fast in a 100m sprint is not necessarily fast in reacting to a stimulus or in changing direction.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

181. A sprinter's ability to maintain their speed and resist slowing down in the last 20 meters of a 100m race is known as:
(A) Acceleration speed
(B) Reaction speed
(C) Speed endurance
(D) Movement speed

182. A speed development method that focuses on improving the stretch-shortening cycle of muscles is:
(A) Interval training
(B) Plyometric training
(C) Continuous running
(D) Static stretching

183. Identify the incorrect pair regarding types of flexibility:
(A) Active Flexibility: Achieved by own muscle contraction
(B) Passive Flexibility: Achieved with external help
(C) Dynamic Flexibility: Flexibility during movement
(D) Static Flexibility: Flexibility during high-speed movement

184. The primary characteristic of flexibility is:
(A) The range of motion around a joint or series of joints.
(B) The ability to produce force.
(C) The ability to sustain activity.
(D) The ability to move quickly.

185. A hockey player's ability to change direction rapidly while controlling the ball demonstrates a combination of speed and which other ability?
(A) Static strength
(B) Passive flexibility
(C) Coordinative ability (Agility/Adaptation)
(D) Aerobic endurance

186. A remedial measure for overload would be to:
(A) Ensure adequate nutrition and sleep
(B) Increase training volume
(C) Decrease recovery time
(D) Introduce more psychological stressors

187. Isotonic exercises, used for strength development, are characterized by:
(A) Muscle contraction with no change in

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(D) Overload

230. A remedial measure for overload would be to:
(A) Increase training volume
(B) Ensure adequate nutrition and sleep
(C) Decrease recovery time
(D) Introduce more psychological stressors

231. Isotonic exercises, used for strength development, are characterized by:
(A) Muscle contraction with no change in muscle length.
(B) Muscle contraction at a constant speed of movement.
(C) A complete lack of muscle contraction.
(D) Muscle contraction with a change in muscle length against a constant resistance.

232. Long-term endurance (aerobic) is primarily limited by the capacity of the:
(A) Cardiorespiratory system to transport oxygen
(B) Muscular system to produce force
(C) Nervous system to react quickly
(D) Skeletal system to bear weight

233. The development of which physical quality is most constrained by genetic factors?
(A) Endurance
(B) Flexibility
(C) Speed
(D) Strength Endurance

234. A person holding a yoga pose without any support is demonstrating:
(A) Static-Active flexibility
(B) Static-Passive flexibility
(C) Dynamic-Active flexibility
(D) Dynamic-Passive flexibility

235. A gymnast performing on the balance beam exhibits a high level of which specific coordinative ability?
(A) Reaction ability
(B) Rhythm ability
(C) Differentiation ability
(D) Balance ability

236. The stage of technique development where the learner has a basic idea of the movement but performs it inefficiently and with many errors is the:
(A) Automation stage
(B) Gross coordination stage
(C) Fine coordination stage
(D) Mastery stage

237. Planning in sports training is important because it:
(A) Makes training less scientific.
(B) Eliminates the need for a coach's expertise.
(C) Provides structure, direction, and a basis for evaluation.
(D) Ensures that the athlete never gets tired.

238. A training plan that covers a whole year or season is called a:
(A) Microcycle
(B) Mesocycle
(C) Session plan
(D) Macrocycle

239. The "taper" before a major competition is part of which period?
(A) Competition Period
(B) Preparatory Period
(C) Transitional Period
(D) Off-season

240. Match List I (Concept) with List II (Example):
List I : (Concept)
P. Tactic
Q. Strength
R. Endurance
S. Periodization
List II : (Example)
1. Dividing the year into training, competition, and rest phases
2. Running a full-court press in basketball
3. Completing a triathlon
4. Performing a heavy bench press
Codes:
(A) P-2, Q-4, R-3, S-1
(B) P-1, Q-2, R-3, S-4
(C) P-2, Q-3, R-4, S-1
(D) P-4, Q-2, R-1, S-3

241. The final step in talent identification is often considered to be:
(A) The initial measurement of physical traits like height and weight.

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199. Which of the following factors is a major determinant of endurance performance?
(A) Maximal explosive strength
(B) Reaction time
(C) Body height
(D) Economy of movement

200. Match List I (Stage of Technique Development) with List II (Key Characteristic):
List I : (Stage)
P. Gross Coordination
Q. Fine Coordination
R. Stabilization/Automation
S. Initial exposure
List II : (Characteristic)
1. Unstable, inconsistent performance under pressure
2. High consistency, adaptable to game situations
3. Rudimentary understanding, many errors
4. Movement is understood, but still requires conscious effort
Codes:
(A) P-3, Q-4, R-2, S-1
(B) P-3, Q-1, R-2, S-4
(C) P-4, Q-1, R-2, S-3
(D) P-3, Q-4, R-1, S-2

201. Which factor is a primary determinant of an athlete's speed?
(A) VO_2 max
(B) Lactate threshold
(C) Muscle fiber composition
(D) Body fat percentage

202. Training that aims to improve a sprinter's ability to achieve top speed in the shortest possible time focuses on:
(A) Acceleration Speed
(B) Reaction Speed
(C) Speed Endurance
(D) Basic Endurance

203. Consider the following statements about flexibility:
i. It is joint-specific.
ii. Age and physical activity level affect flexibility.
iii. Females are generally more flexible than males.
iv. Muscle temperature has no effect on flexibility.
v. It is the same as strength.
Which of the above statement(s) is/are correct?
(A) i, ii, and v
(B) i, ii, and iii
(C) iii, iv, and v
(D) i, iv, and v

204. Which of the following methods for flexibility development involves a partner and combines isometric contraction with passive stretching?
(A) Ballistic Stretching
(B) PNF Stretching
(C) Static Stretching
(D) Dynamic Stretching

205. The ability to quickly and purposefully perform difficult motor actions is a central characteristic of:
(A) Strength endurance
(B) Basic endurance
(C) Coordinative abilities
(D) Static strength

206. Which of the following is NOT considered a primary type of coordinative ability?
(A) Balance ability
(B) Rhythm ability
(C) Orientation ability
(D) Maximum strength ability

207. A perfected, efficient, and idealized movement pattern for a specific sport action is called:
(A) A technique
(B) A skill
(C) A tactic
(D) A strategy

208. The main importance of a good technique is that it:
(A) Guarantees an athlete will never lose.
(B) Allows for the most efficient production of force and movement.
(C) Is only useful in aesthetically judged sports.
(D) Cannot be improved with practice.

209. In the context of team sports, 'strategy' refers to:
(A) The specific action a player takes to pass the ball.
(B) The overall, long-term plan to achieve a major goal (e.g., win a championship).

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stresses. This adaptation is the fundamental basis of performance improvement, achieved by methodically executing training loads through various means and methods, such as continuous, interval, or resistance training, to target specific physical qualities.

Based on the above source, attempt the following five questions.

251. According to the passage, which principle of sports training is most directly linked to the avoidance of performance decline due to breaks in training?
(A) The principle of individualization
(B) The principle of continuity
(C) The principle of progressive overload
(D) The principle of specificity

252. Which of the following best describes the 'adaptation process' as mentioned in the source?
(A) The physiological enhancement of functional capacity in response to training stress.
(B) The immediate fatigue experienced during a workout session.
(C) The psychological stress an athlete feels before a competition.
(D) The quantification of work through volume and intensity.

253. Based on the source, 'training load' can be understood as:
(A) A purely physical measure of an athlete's workout.
(B) The athlete's subjective feeling of tiredness after a session.
(C) The combination of physiological and psychological demands imposed by training.
(D) The pedagogical organization of a training program.

254. If a coach increases the amount of rest time between repetitions in a training set, which feature of the training load is being manipulated?
(A) Volume
(B) Intensity
(C) Frequency
(D) Density

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255. What is the primary purpose of applying the principle of 'progressive overload' in sports training?
(A) To ensure the training program is individualized for each athlete.
(B) To maintain a consistent level of training stress throughout the season.
(C) To stimulate continuous physiological adaptation and performance improvement.
(D) To reduce the psychological stress associated with high-performance sport.

Direction : Please read the following source carefully.

While progressive overload is a fundamental principle for athletic improvement, its misapplication can lead to a detrimental state known as overload, or overtraining. Overload occurs when an athlete is subjected to a training stimulus that is too intense or voluminous for their recovery capacity, resulting in a maladaptive state where performance stagnates or declines. The primary causes of this condition are multifaceted, extending beyond just excessive physical work. They include a too-rapid increase in training load without adequate adaptation time, insufficient rest and recovery between sessions, poor nutritional support that fails to replenish energy stores and repair tissue, and significant external psychological stressors that tax the body's resources. The symptoms of overload are both physiological and psychological. An athlete may experience chronic fatigue, a noticeable drop in performance levels, an elevated resting heart rate, increased susceptibility to infections and injuries, and mood disturbances such as irritability or apathy. Addressing this condition requires immediate and decisive remedial measures. The first step is a significant reduction in training load, often involving a period of complete rest. This must be complemented by a focus on enhanced recovery strategies, including improved nutrition, adequate sleep, and psychological support or counseling. A return to training must be cautious and gradual, carefully monitoring the athlete's response to prevent a recurrence.

Based on the above source, attempt the following five questions.

degree of precision and economy in motor actions. Reaction ability is the speed at which an athlete can respond to a stimulus and initiate a required action. Balance ability involves maintaining the body's equilibrium while stationary (static balance) or in motion (dynamic balance). Finally, rhythm ability is the capacity to perceive an external rhythm and reproduce it in motor action, or to express a movement with an internal sense of timing. The development of these abilities is influenced by factors such as the quality of sensory analysers (kinesthetic, visual, vestibular), an athlete's repository of past movement experiences, and their level of other motor abilities.

Based on the above source, attempt the following five questions.

281. A basketball player adjusting their body in mid-air to take a shot while avoiding a defender is primarily demonstrating which coordinative ability?
(A) Orientation ability
(B) Rhythm ability
(C) Differentiation ability
(D) Reaction ability

282. According to the passage, what is the fundamental characteristic of all coordinative abilities?
(A) They are primarily determined by muscular strength.
(B) They are highly dependent on the central nervous system's control of movement.
(C) They are only important in sports that require artistic expression.
(D) They are genetically fixed and cannot be improved with training.

283. The ability of a table tennis player to apply the exact amount of spin and force on the ball is an example of:
(A) Balance ability
(B) Differentiation ability
(C) Orientation ability
(D) Rhythm ability

284. The source suggests that an athlete's previous experiences with various movements can influence the development of their coordinative abilities. This implies that:
(A) A broad base of motor experiences can enhance an athlete's ability to learn new skills.
(B) Coordinative abilities are best developed by specializing in one sport from a very young age.
(C) The quality of sensory organs is irrelevant if an athlete has enough experience.
(D) Past experiences determine the upper limit of an athlete's reaction ability.

285. Which coordinative ability is defined as the capacity to maintain the body's equilibrium while in motion?
(A) Static balance
(B) Orientation ability
(C) Dynamic balance
(D) Reaction ability

Direction : Please read the following source carefully.

In the lexicon of sports training, the terms technique, skill, tactics, and strategy represent distinct yet interconnected concepts. Technique is defined as the most rational and efficient method of performing a specific motor action, grounded in biomechanical and physiological principles. It is the idealized model of a movement, such as a perfect tennis serve. Skill, however, is the successful application of that technique under the variable and often stressful conditions of competition. It is the learned ability to achieve a desired outcome with maximum certainty and efficiency. An athlete may have a good technique in practice but lack the skill to execute it effectively in a match. The development of technique is a progressive process, typically unfolding in three stages. The initial or cognitive stage involves understanding the movement. The second or associative stage is characterized by practice and refinement, where errors are gradually eliminated. The final or autonomous stage sees the technique become automatic, allowing the athlete to focus on other aspects of performance. Beyond individual execution, tactics refer to the specific, short-term actions and plans used during a competition to outwit an opponent. In contrast, strategy is the overarching, long-term plan for an entire competition or season, which dictates the overall approach and from which specific tactics are derived.

Based on the above source, attempt the following

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(A) The speed of muscle contraction.
(B) The muscle's cross-sectional area.
(C) The coordination between different muscle groups.
(D) The muscle's ability to resist fatigue.

263. What is the key distinction between maximum strength and explosive strength as described in the passage?
(A) Maximum strength involves more muscle groups than explosive strength.
(B) Maximum strength is trainable, whereas explosive strength is genetically determined.
(C) Explosive strength incorporates the element of speed, while maximum strength does not.
(D) Explosive strength is about sustaining force, while maximum strength is about a single effort.

264. The term 'intra-muscular coordination' refers to the:
(A) Coordination between opposing muscle groups like biceps and triceps.
(B) Overall size and volume of a specific muscle.
(C) Proportion of fast-twitch to slow-twitch fibres.
(D) Recruitment and firing patterns of motor units within a single muscle.

265. The passage characterizes strength as a 'foundational' motor ability because:
(A) It is a prerequisite for the effective expression of other abilities like speed.
(B) It is the only motor ability that can be scientifically measured.
(C) It is the easiest motor ability to develop through training.
(D) It depends solely on the anatomical structure of the muscles.

Direction : Please read the following source carefully.

Endurance is characterized as the ability to sustain a specific level of physical exertion for a prolonged duration, which is intrinsically linked to the capacity to resist fatigue. This motor ability is heavily dependent on the efficiency of the body's energy delivery systems, particularly the cardiovascular and respiratory systems, which supply oxygen and nutrients to working muscles. Endurance can be classified into several types. A primary distinction is made based on the dominant energy pathway: aerobic endurance involves activities of low to moderate intensity where oxygen supply meets demand, while anaerobic endurance pertains to high-intensity activities where energy is produced without sufficient oxygen, leading to rapid fatigue. Another classification distinguishes between basic endurance, which refers to a general, non-sport-specific cardiorespiratory fitness, and specific endurance, which is the ability to withstand the unique fatigue demands of a particular sport or event. The factors determining an individual's endurance capacity are complex and physiological. Key determinants include the maximal oxygen uptake (VO_2 max), the lactate threshold (the intensity at which lactate accumulates in the blood faster than it can be cleared), and movement economy (the energy required to maintain a constant velocity of movement). Psychological factors, such as motivation and determination, also play a significant role in pushing through discomfort and fatigue.

Based on the above source, attempt the following five questions.

266. According to the passage, which of the following best defines 'aerobic endurance'?
(A) The ability to perform short bursts of maximum intensity exercise.
(B) The ability to sustain activity where oxygen demand is met by oxygen supply.
(C) The general fitness level unrelated to any specific sport.
(D) The psychological willingness to continue exercising despite fatigue.

267. 'Lactate threshold' is described as a determining factor for endurance. What does it signify?
(A) The maximum amount of oxygen an athlete can utilize during intense exercise.
(B) The exercise intensity beyond which lactate build-up exceeds its rate of removal.
(C) The point at which psychological motivation begins to decline.
(D) The efficiency with which an athlete moves, conserving energy.

268. A marathon runner's ability to maintain pace for over two hours is an example of what

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ANSWERS

1. (B) It is a systematic process of preparation for sport performance.
Sports training is a planned and organized pedagogical process designed to improve an athlete's physical, technical, and psychological performance. It follows scientific principles to ensure progress and peak performance during competitions. Unlike random physical activity, it involves deliberate preparation and structured training loads. Coaches use this systematic approach to help athletes achieve specific goals by gradually increasing the difficulty of tasks while ensuring adequate recovery.

2. (A) Adaptation
Adaptation represents the body's long-term response to regular training stimuli, where physiological systems become more efficient. When an athlete undergoes repeated physical stress, the body adjusts by strengthening muscles, improving cardiovascular capacity, and refining neural pathways. This adjustment allows the individual to handle higher intensities or longer durations of work. It is the fundamental mechanism through which physical fitness improves and sports performance reaches higher levels.

3. (A) Both Statement I and Statement II are true.
Training load is the total workload an athlete experiences during a session, comprising both volume and intensity. Volume represents the quantity of work, such as total distance or weight lifted, while intensity reflects the quality or difficulty of the effort. These components work together to provide the necessary stimulus for physical improvement. Monitoring both aspects ensures that the training is effective enough to trigger positive physiological changes.

4. (D) A state caused by an imbalance between training and recovery.
Overload occurs when the training stimulus significantly exceeds an individual's current capacity without providing sufficient time for recovery. While a controlled increase in load is necessary for progress, an excessive or poorly managed load leads to chronic fatigue and performance decline. This state disrupts the body's homeostatic balance and can result in physical or psychological symptoms. Proper recovery strategies are essential to avoid the negative effects of this imbalance.

5. (A) P-2, Q-4, R-1, S-3
Physical fitness components are defined by specific characteristics related to movement and exertion. Strength is the capacity of muscles to overcome external resistance. Endurance involves the ability to sustain prolonged physical activity without fatiguing. Speed refers to performing actions or covering distances in the minimum possible time. Flexibility represents the range of motion available at a joint. Understanding these distinct characteristics helps coaches design targeted training programs for athletes.

6. (B) Principle of Inconsistency
Sports training relies on established principles to ensure effective and safe performance enhancement. Principles like progression and specificity guide the gradual increase of training difficulty and the targeting of specific muscles or skills. Reversibility highlights that fitness gains are lost if training stops. Inconsistency, however, is detrimental because regularity and continuity are required for the body to adapt and maintain the physiological improvements gained through exercise.

7. (D) Principle of systematic increase in load
The principle of systematic increase in load suggests that training demands must be raised gradually as the athlete's body adapts to previous stressors. By increasing parameters like weight, volume, or intensity over time, the body is continuously challenged to improve. This planned progression prevents plateaus and ensures that the training stimulus remains effective. It is a fundamental strategy for achieving long-term performance gains while minimizing the risk of overtraining.

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(D) It allows for an unrestricted range of motion in the joints.

Direction : Please read the following source carefully.

Flexibility is defined in sports science as the optimal range of motion available at a joint or a series of joints. A primary characteristic of flexibility is its high degree of specificity; an individual can be very flexible in their shoulder joints but have limited flexibility in their hips. It is a critical component of fitness, contributing to more efficient movement, improved skill execution, and a reduced risk of certain types of injuries. Flexibility can be categorized into two main types. Active flexibility is the range of motion an individual can achieve by actively contracting muscles, without any external assistance. For example, lifting one's leg as high as possible. In contrast, passive flexibility refers to the range of motion that can be achieved with the help of an external force, such as a partner providing a stretch or the pull of gravity. Typically, passive flexibility is greater than active flexibility. The factors determining an individual's flexibility are both anatomical and physiological. The structure of the joint itself sets the ultimate limit on range of motion. The elasticity and plasticity of the surrounding muscles, tendons, and ligaments are also major determinants. Furthermore, factors such as body and muscle temperature (warm muscles are more extensible), age, and gender can influence flexibility.

Based on the above source, attempt the following five questions.

276. Which statement best reflects the characteristic of specificity in flexibility?

(A) A person's flexibility level can differ significantly from one joint to another.
(B) All joints in a person's body have the same range of motion.
(C) Flexibility is equally important for all sports.
(D) Only specific stretching methods can improve flexibility.

277. A gymnast holding a split position on the floor is primarily demonstrating which type of flexibility?

(A) Passive flexibility
(B) Dynamic flexibility
(C) Ballistic flexibility
(D) Active flexibility

278. According to the passage, why is passive flexibility generally greater than active flexibility?

(A) Because it relies on the strength of the individual's muscles.
(B) Because it utilizes an external force to extend the range of motion.
(C) Because it is not limited by the anatomical structure of the joint.
(D) Because it is less affected by body temperature.

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279. Which of the following is listed as a factor that can limit the ultimate range of motion at a joint?

(A) The individual's level of motivation.
(B) The elasticity of the muscles.
(C) The anatomical structure of the joint.
(D) The type of sport the individual plays.

280. The passage suggests that warming up before stretching is beneficial because:

(A) It increases the strength of the muscles being stretched.
(B) It decreases the anatomical limits of the joints.
(C) It improves active flexibility but not passive flexibility.
(D) It makes the muscles and connective tissues more extensible.

Direction : Please read the following source carefully.

Coordinative abilities are a class of motor abilities that primarily enable an athlete to control and regulate motor actions with both precision and efficiency. Their core characteristic is their strong dependence on the central nervous system's capacity to process information and govern movement. These abilities are crucial for performing complex skills, adapting to changing competitive environments, and learning new movements quickly. Several distinct types of coordinative abilities have been identified. Orientation ability is the capacity to determine and alter the position and movement of the body in space and time relative to a field of action (e.g., a court, opponents). Differentiation ability refers to the fine-tuning of movement, achieving a high

256. According to the passage, what is the key difference between beneficial 'progressive overload' and detrimental 'overload'?
(A) Progressive overload is psychological, while overload is physiological.
(B) Progressive overload allows for adaptation, while overload exceeds recovery capacity.
(C) Progressive overload involves increasing volume, while overload involves increasing intensity.
(D) Progressive overload is planned, while overload is accidental.

257. Which of the following is NOT listed in the passage as a potential cause of overload?
(A) Insufficient rest periods
(B) Poor nutritional habits
(C) High levels of psychological stress
(D) A very slow increase in training intensity

258. A coach observes that their star athlete, despite training hard, is showing declining performance, frequent colds, and uncharacteristic irritability. According to the source, these observations are most likely symptoms of:
(A) The state of overload.
(B) The normal adaptation process.
(C) Insufficient training intensity.
(D) A lack of individualization in the training plan.

259. Based on the remedial measures described in the passage, what should be the immediate priority when managing an athlete experiencing overload?
(A) Increasing nutritional intake while maintaining the training schedule.
(B) Implementing psychological counseling to improve motivation.
(C) A significant reduction in training load, possibly including complete rest.
(D) Switching to a different type of training to stimulate new adaptations.

260. The passage implies that overload is a condition that:
(A) Results from an imbalance between training stress and recovery.
(B) Affects only elite, professional athletes.
(C) Is caused exclusively by physical training mistakes.
(D) Can be resolved quickly with one or two extra days of rest.

Direction : Please read the following source carefully.

Strength is a fundamental motor ability, defined as the capacity of a muscle or a group of muscles to exert force against an external resistance. Its characteristics are foundational, as strength underpins other abilities like speed and power. The development of strength is paramount in a vast majority of sports for both performance enhancement and injury prevention. Strength can be classified into several types based on the nature of the muscular contraction and the task's demands. Maximum strength refers to the highest force a muscle can generate in a single voluntary contraction, irrespective of time. Explosive strength, a combination of strength and speed, is the ability to exert force as rapidly as possible. Strength endurance is the ability to sustain repeated muscular contractions or maintain a certain level of force over a prolonged period, essentially the muscle's resistance to fatigue. A variety of factors determine an individual's potential for strength. Physiological factors are dominant, including the muscle's cross-sectional area (a larger muscle has greater force potential) and the composition of muscle fibres, with a higher proportion of fast-twitch fibres favouring explosive and maximum strength. Furthermore, neuromuscular coordination, which encompasses both intra-muscular (recruitment and firing rate of motor units within a muscle) and inter-muscular (coordination between different muscle groups) efficiency, plays a critical role in how effectively potential force is expressed.

Based on the above source, attempt the following five questions.

261. According to the passage, which type of strength is most closely associated with resisting fatigue during repetitive actions?
(A) Maximum strength
(B) Explosive strength
(C) Foundational strength
(D) Strength endurance

262. The source suggests that an athlete's maximum strength potential is most directly determined by which factor?

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five questions.

286. According to the passage, what is the primary difference between 'technique' and 'skill'?
(A) Technique is learned, while skill is innate.
(B) Technique relates to team sports, while skill relates to individual sports.
(C) Technique involves strategy, while skill involves tactics.
(D) Technique is the idealized movement, while skill is its successful application in competition.

287. An athlete who can perform a complex movement automatically without conscious thought is in which stage of technique development?
(A) The cognitive stage
(B) The associative stage
(C) The autonomous stage
(D) The strategic stage

288. A football team deciding to use a high-press defense specifically for the first 15 minutes of a match is an example of:
(A) A strategy
(B) A tactic
(C) A technique
(D) A skill

289. The passage defines 'strategy' as:
(A) A specific action used to gain an immediate advantage over an opponent.
(B) The most rational way of performing a motor task.
(C) The ability to perform a movement with maximum certainty.
(D) The overarching, long-term plan for a competition or season.

290. Why is the development of good technique considered important in sports?
(A) Because it forms the basis for efficient and effective skill execution.
(B) Because it guarantees victory in competition.
(C) Because it is more important than physical fitness.
(D) Because it is a substitute for tactical planning.

Direction : Please read the following source carefully.

Effective sports training is impossible without systematic planning, which is the process of setting goals and pre-determining a course of action to achieve them. The primary importance of planning is that it provides a logical and structured framework for the training process, ensuring that an athlete develops optimally and reaches peak condition at the right time. Key principles guiding this process include setting clear and achievable goals, individualization to the athlete's needs, and specificity, which ensures that the training is relevant to the demands of the sport. Planning is executed on various timescales. Long-term planning, often called a macrocycle, may span a full year or even a four-year Olympic cycle. This is broken down into medium-term plans, or mesocycles, which typically last several weeks to a few months and focus on a specific training objective, like developing maximum strength. The shortest planning unit is the short-term plan, or microcycle, which structures training for a single week. A central concept within this planning framework is periodization. Periodization is the logical and systematic division of a training year or macrocycle into distinct periods, each with specific objectives and a particular focus on training volume and intensity. The main objective of periodization is to manage fatigue and adaptation, preventing overtraining while ensuring the athlete peaks for the most important competitions.

Based on the above source, attempt the following five questions.

291. According to the passage, what is the main objective of periodization?
(A) To increase training volume consistently throughout the year.
(B) To focus solely on the principle of individualization.
(C) To ensure the athlete is in peak condition for the main competitions.
(D) To make all training sessions identical in intensity and volume.

292. A coach designing a four-week training block focused specifically on improving an athlete's anaerobic endurance is engaged in what type of planning?
(A) Mesocycle planning
(B) Macrocycle planning
(C) Microcycle planning

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type of endurance, according to the passage's classifications?
(A) Primarily aerobic and specific endurance.
(B) Primarily anaerobic and basic endurance.
(C) Primarily anaerobic and specific endurance.
(D) Primarily aerobic and basic endurance.

269. The passage states that endurance is heavily dependent on the cardiovascular and respiratory systems because they are responsible for:
(A) Producing energy without the use of oxygen.
(B) Strengthening the muscles used during the activity.
(C) Delivering oxygen and nutrients to the working muscles.
(D) Improving an athlete's movement economy.

270. Which factor, as described in the source, relates to the energy cost of performing a movement at a given speed?
(A) VO_2 max
(B) Lactate threshold
(C) Basic endurance
(D) Movement economy

Direction : Please read the following source carefully.

Speed, as a motor ability, is defined by the capacity to perform a movement or a series of movements in the shortest possible time. Its primary characteristic is its high reliance on the efficiency of the central nervous system and its significant genetic component, particularly related to muscle fibre composition. Speed is not a monolithic quality but is comprised of different types. Reaction speed is the ability to respond as quickly as possible to a stimulus, such as a starter's gun. Movement speed refers to the ability to execute a single, discrete movement, like a punch in boxing, in the minimum amount of time. Locomotor speed is the ability to move the entire body from one point to another, which involves not just achieving maximum velocity but also maintaining it. The factors determining an individual's speed are multifaceted. A high percentage of fast-twitch muscle fibres is a crucial physiological prerequisite. Beyond genetics, neuromuscular efficiency, which governs the speed and coordination of muscle contractions, is paramount. Other determining factors include explosive strength, which provides the force for rapid acceleration; adequate flexibility, which allows for an unrestricted range of motion; and proper technique, which ensures that the force generated is applied efficiently. Consequently, the development of speed is a complex training process that must address all these components through specific drills.

Based on the above source, attempt the following five questions.

271. A sprinter's quick start off the blocks in a 100-meter race is a prime example of which type of speed?
(A) Movement speed
(B) Locomotor speed
(C) Reaction speed
(D) Coordinated speed

272. According to the passage, which of the following factors is described as a significant genetic component determining speed?
(A) The athlete's level of motivation.
(B) The composition of muscle fibres.
(C) The efficiency of movement technique.
(D) The frequency of training sessions.

273. The ability of a javelin thrower to rapidly move their throwing arm forward is an illustration of:
(A) Locomotor speed
(B) Reaction speed
(C) Endurance speed
(D) Movement speed

274. The passage implies that to improve an athlete's overall speed, a coach should focus on:
(A) A complex approach that includes strength, flexibility, and technique.
(B) Training only one type of speed, such as reaction time.
(C) Increasing training volume significantly.
(D) Prioritizing endurance training to build a strong base.

275. What is the role of 'neuromuscular efficiency' in determining speed?
(A) It determines the maximum force a muscle can produce.
(B) It relates to the body's ability to use oxygen during exercise.
(C) It governs the speed and coordination of muscle contractions.

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(D) The transitional period

300. A coach shifts the training focus from general conditioning exercises to drills that closely mimic the movements and energy systems of the actual sport. This change signifies a move from which phase to another?

(A) From General Preparatory to Specific Preparatory sub-phase.
(B) From Competition to Transitional Period.
(C) From Transitional Period to General Preparatory sub-phase.
(D) From Specific Preparatory sub-phase to Competition Period.

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(D) Strategic planning

293. Which of the following is described in the passage as a fundamental principle of planning in sports training?
(A) Maximizing training volume at all times.
(B) Following a generic training plan for all athletes.
(C) Focusing exclusively on short-term goals.
(D) Ensuring training is specific to the sport's demands.

294. A macrocycle is an example of which type of planning?
(A) Short-term planning
(B) Long-term planning
(C) Medium-term planning
(D) Daily planning

295. The passage suggests that the importance of planning lies in its ability to:
(A) Eliminate the need for a coach's supervision.
(B) Guarantee that the athlete will win every competition.
(C) Provide a structured approach to optimize development and timing of peak performance.
(D) Create a training program that never changes.

Direction : Please read the following source carefully.

The concept of periodization organizes the training year into three principal periods: the Preparatory, Competition, and Transitional periods. Each period has distinct objectives and a unique structure of training load. The Preparatory Period is typically the longest phase and is dedicated to building the physiological, technical, and psychological foundations for the upcoming season. It is often subdivided into a general preparatory sub-phase, characterized by high training volume and lower intensity with a focus on all-around fitness, and a specific preparatory sub-phase, where volume may decrease slightly as intensity and sport-specific activities increase. The Competition Period's main goal is to maintain the fitness levels acquired during the preparatory phase while perfecting skills and tactics for optimal performance. During this period, training volume is significantly reduced to allow for recovery and freshness, while intensity remains high to simulate competitive demands. This phase culminates in the main competitions of the season. Following the final competition, the athlete enters the Transitional Period. This is a crucial phase of active recovery, aimed at facilitating psychological and physiological recuperation. It involves low-intensity, often non-specific, enjoyable activities that help the athlete recover from the stresses of the long season before beginning the next macrocycle. Parallel to this structured training of established athletes, the long-term health of a sport relies on talent identification, a systematic process to discover and select promising young athletes based on assessments of their physical, physiological, and psychological attributes.

Based on the above source, attempt the following five questions.

296. During which period of training is the training volume typically at its highest and the intensity at its lowest?
(A) Competition Period
(B) Transitional Period
(C) Specific Preparatory sub-phase
(D) General Preparatory sub-phase

297. What is the primary purpose of the Transitional Period?
(A) To facilitate psychological and physiological recovery.
(B) To build a new foundation of general fitness.
(C) To peak for the most important competition of the year.
(D) To increase sport-specific training intensity.

298. According to the passage, the training structure during the Competition Period is characterized by:
(A) High volume and high intensity.
(B) Reduced volume and high intensity.
(C) Low volume and low intensity.
(D) High volume and low intensity.

299. The process of discovering promising young athletes through systematic assessment of their attributes is known as:
(A) Periodization
(B) Talent identification
(C) The preparatory period

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8. (B) i, ii, and iii are correct.
Sports training is characterized by being a planned, systematic, and educational process focused on enhancing athletic performance. It involves collaboration between the coach and athlete to develop technical skills and physical capacities. Unlike casual exercise, it is firmly rooted in scientific principles like physiology, biomechanics, and psychology. These elements ensure that the preparation is purposeful and objective-oriented, leading to consistent improvements in the athlete's ability to compete.

9. (C) Insufficient recovery between training sessions
Training overload primarily arises when the demands placed on the athlete's body are not balanced with adequate rest and regeneration. While challenging workouts are necessary for progress, the body requires time between sessions to repair tissues and replenish energy stores. When recovery periods are too short or of poor quality, fatigue accumulates, leading to a state of overtraining where performance stalls or decreases significantly over time.

10. (A) Both A and R are true and R is the correct explanation of A.
Adaptation is a vital process where the body modifies its internal systems to cope with the stress of training loads. When exposed to a specific physical stimulus, the body responds by becoming more resilient and functional. This biological adjustment is the foundation of all training-induced improvements. Because the body strives to reach a higher level of function after being challenged, the systematic application of training loads results in enhanced athletic performance.

11. (D) Explosive strength
Explosive strength is the ability of the neuromuscular system to overcome resistance with a high rate of force development. This component is essential in sports requiring rapid, powerful movements, such as jumping, sprinting, or throwing. It combines the elements of force and velocity, allowing an athlete to exert maximum effort in the shortest possible timeframe. Developing this type of strength involves training the nervous system to recruit motor units quickly and efficiently.

12. (B) An increased appetite and motivation for training.
Overload typically results in negative physiological and psychological changes rather than positive ones. Common symptoms include persistent muscle soreness, a noticeable decrease in performance, sleep disturbances, and irritability. Athletes suffering from excessive training stress often experience a loss of appetite and a decline in their motivation to train. Understanding these warning signs is crucial for coaches to identify when an athlete requires more recovery or a reduction in training intensity.

13. (C) Implement a period of active or passive recovery.
When an athlete shows signs of chronic fatigue and declining performance due to overload, the most effective immediate action is to provide adequate rest. Implementing a period of active or passive recovery allows the body's systems to regenerate and repair. This break helps restore hormonal balance and energy levels, which are often disrupted by excessive training stress. Once the athlete has recovered sufficiently, training can be resumed with a more balanced and carefully planned load.

14. (D) Maximum Strength: Highest force a muscle can exert
Maximum strength is defined as the greatest amount of force a muscle or muscle group can exert in a single voluntary contraction. This is often measured using a one-repetition maximum test in various lifting exercises. It represents the upper limit of an individual's force-generating capacity. Other types of strength, such as endurance or explosive strength, rely on different combinations of force, duration, and speed, making maximum strength a distinct and fundamental physical component.

15. (B) P-3, Q-2, R-1, S-4
Training years are divided into periods with specific objectives to optimize performance. The preparatory period focuses on building a fitness base, while its general phase develops all-round physical capacity. During the competition period, the athlete works on maintaining and perfecting their form for major events. Finally, the transitional period is dedicated to active recovery and regeneration, allowing the athlete to

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an athlete's development, allowing for steady progress and the eventual achievement of high performance levels in their sport.

47. (A) Microcycle planning
Microcycle planning involves creating a detailed training schedule for a short period, typically lasting one week. This plan specifies the training sessions, recovery periods, and specific goals for each day. It is the most granular level of planning and serves as a building block for longer training cycles. By focusing on the immediate week, coaches can adjust the load based on the athlete's current state while still working within the broader seasonal or annual framework.

48. (A) i, ii, and iii are correct.
Planning is essential for optimizing the use of time and resources in sports training. It provides a framework for the objective evaluation of an athlete's progress toward their goals. Furthermore, a good plan must be flexible enough to accommodate unexpected events like injuries or changes in competition schedules. While critical for elite athletes, planning is beneficial for participants at all levels to ensure their training is purposeful, safe, and effective for achieving their personal best.

49. (B) Periodization
Periodization is the systematic process of dividing an annual training plan into specific periods and phases. This approach allows coaches to vary the training volume and intensity to ensure that the athlete reaches their peak performance for the most important competitions. Each period, such as preparatory, competition, or transitional, has distinct goals and focuses. By structured planning through periodization, athletes can manage fatigue, avoid overtraining, and achieve consistent improvements in their physical and technical capacities over time.

50. (B) P-2, Q-4, R-3, S-1
Training plans are categorized by their duration to provide structure at different levels of preparation. A session plan covers a single training unit, while a microcycle typically lasts about one week. A mesocycle is a longer block of several weeks to a few months focused on specific objectives. Finally, a macrocycle represents the overall plan for several months up to an entire year. This hierarchical structure helps coaches manage the training process from daily tasks to long-term goals.

51. (C) To ensure the athlete peaks during the most important competitions.
The primary goal of periodization is to structure training so that an athlete reaches their highest level of performance during the most significant competitions of the year. This is achieved by systematically varying the volume and intensity of workouts across different phases. Periodization also helps in managing fatigue and preventing overtraining by including planned recovery periods. By focusing on specific development goals at different times, the athlete can build a solid foundation before specializing for peak performance during events.

52. (D) Single periodization
Single periodization is an annual training structure that aims for one major competitive peak during the year. This model is common in sports with one main championship or a short, concentrated competitive season. The year is divided into one preparatory period, one competition period, and one transitional period. This allows for a long, steady buildup of fitness and technical skills, providing ample time for the athlete to reach their maximum potential for the designated main event.

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53. (C) Preparatory Period
The preparatory period is the first major phase of a training year, characterized by high training volume and relatively low to moderate intensity. Its main objective is to establish a strong physical, technical, and psychological foundation. During this time, athletes focus on general fitness development, such as building aerobic endurance and basic strength. This base is essential for supporting the more intense, sport-specific training that occurs later as the competition season approaches.

54. (B) This period is used for developing basic, general physical qualities.
The competition period is focused on maintaining the fitness levels achieved during the preparatory phase while refining sport-specific techniques and tactics. During this time, training volume is generally reduced to allow for recovery, but the

a strong aerobic base. By maintaining a constant heart rate within a specific training zone, the body becomes more efficient at transporting and using oxygen. It is commonly used by runners, swimmers, and cyclists to build basic endurance for their respective sports.

24. (A) Speed is the ability to perform a motor action in the minimum possible time.
Speed is the motor ability to execute a movement or cover a certain distance in the shortest possible time. It is a complex quality influenced by the nervous system's efficiency, muscle fiber type, and technical proficiency. Unlike strength, which focuses on force, or endurance, which focuses on duration, speed emphasizes the velocity of the action. It is a critical component in many sports where rapid reactions and fast movements are necessary to achieve a competitive advantage.

25. (C) P-2, Q-3, R-4, S-1
Different types of speed serve specific functions in athletic performance. Reaction speed is the time taken to respond to a stimulus. Acceleration speed is the ability to reach maximum velocity from a stationary position. Locomotor speed refers to the highest running speed an athlete can achieve and maintain. Speed endurance is the capacity to sustain near-maximum speed despite the onset of fatigue. Each type requires specific training methods to be developed effectively for various sports requirements.

26. (A) The ratio of fast-twitch to slow-twitch muscle fibers
From a biomechanical and physiological perspective, the proportion of fast-twitch muscle fibers is a major determinant of an athlete's potential for speed. These fibers contract more rapidly and generate greater power compared to slow-twitch fibers, which are more suited for endurance. While training can improve neural efficiency and technique, the genetic makeup of an individual's muscle tissue sets the upper limit for their maximum velocity. This makes fiber composition a key factor in sprint performance.

27. (D) Acceleration speed
Acceleration speed is the ability of an athlete to increase their velocity as quickly as possible from a stationary or slow-moving state. Practicing starts from the blocks is a specific drill designed to improve the initial phase of a sprint. It focuses on generating high levels of force against the ground to overcome inertia and reach top speed rapidly. This type of training is essential for sprinters and athletes in sports requiring quick bursts of movement.

28. (B) iii and iv are correct.
Flexibility is the range of motion available at a joint or group of joints, and it is significantly influenced by joint structure. Dynamic flexibility refers to the ability to perform movements with a large amplitude during active motion. This is distinct from static flexibility, which involves holding a position. Active flexibility is achieved through one's own muscle contractions, while passive flexibility relies on external assistance. Understanding these distinctions helps in selecting appropriate stretching techniques for different sporting needs.

29. (C) Flexibility
Flexibility is defined as the ability to move joints through their full range of motion. It is a critical component of physical fitness that contributes to movement efficiency and helps in the prevention of injuries. Factors such as the elasticity of muscles, tendons, and ligaments, as well as the structure of the joints themselves, determine an individual's level of flexibility. Regular stretching exercises can help maintain or improve this range, enhancing overall athletic performance and mobility.

30. (A) Both A and R are true and R is the correct explanation of A.
The transitional period is a necessary phase in a training year that follows the competition period. Its primary purpose is to provide the athlete with physical and psychological rest after the high stresses of intense training and competition. By allowing for regeneration, this period helps prevent burnout and ensures the athlete is ready to begin the next training cycle with renewed energy. It involves active rest through low-intensity recreational activities rather than complete inactivity.

31. (A) Explosive flexibility
Flexibility is categorized into several types based on how the movement is performed. Active flexibility involves using one's own muscles to

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reach a range of motion, while passive flexibility uses external force. Dynamic flexibility relates to movement amplitude, and static flexibility involves holding a position. Explosive flexibility is not a recognized term in sports science, as explosive qualities are typically associated with strength and power rather than the range of motion around a joint or muscle group.

32. (B) Muscle temperature
Muscle temperature is a critical factor that directly influences the elasticity of soft tissues. When muscles are warm, the connective tissues become more pliable, allowing for a greater range of motion at the joints. This is why a proper warm-up is essential before performing stretching exercises or intense physical activity. Increasing the internal temperature of the muscles reduces the risk of strains and allows athletes to achieve their maximum flexibility during training or competition sessions.

33. (B) Static-Passive flexibility
Static-passive flexibility is demonstrated when an individual holds a stretched position for a duration with the help of an external force, such as gravity or the floor. In the case of holding a split on the floor, the athlete's body weight and the ground provide the necessary force to maintain the large range of motion. This type of stretching is often used to increase long-term flexibility and is characterized by the absence of active muscular movement.

34. (A) They are primarily dependent on the quality of motor control and regulation processes.
Coordinative abilities are the capacities that enable an athlete to perform motor actions with precision, economy, and fluidity. They are primarily determined by the efficiency of the central nervous system in controlling and regulating muscle movements. These abilities are fundamental for learning new skills and adapting to changing situations during sports. Unlike physical components like strength or endurance, coordinative abilities focus on the quality of the interaction between the brain and the muscular system during complex tasks.

35. (C) Balance ability
Balance ability is the capacity to maintain or restore the body's equilibrium while in a static position or during movement. It involves keeping the center of gravity within the base of support through continuous adjustments of the muscles. This ability is essential in almost every sport, from gymnasts performing on a beam to football players staying on their feet while being tackled. It relies on sensory information from the eyes, inner ear, and muscles to function effectively.

36. (D) Adaptation ability
Adaptation ability is a coordinative capacity that allows an athlete to change their planned movement based on unexpected changes in the environment. For example, when a defender moves unexpectedly, a player must quickly modify their actions to maintain an advantage. This requires the nervous system to process new information rapidly and execute a revised motor program. It is a high-level skill that distinguishes elite athletes who can perform effectively under the unpredictable conditions of competitive sports.

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37. (C) It benefits from exposure to a wide variety of movement experiences, especially in youth.
Coordinative abilities are best developed during childhood and youth when the nervous system is most adaptable. Exposure to a broad range of movement experiences and diverse motor tasks helps build a strong foundation for future skill acquisition. Repeatedly performing only one task limits the development of these capacities. As the central nervous system matures, it becomes more efficient at processing information and controlling movements, making early varied training essential for achieving high levels of athletic proficiency later in life.

38. (D) i, ii, iii, and iv
Coordinative abilities include various specific capacities such as orientation, balance, rhythm, and reaction. These abilities are essential for the effective execution of motor skills and are governed by the central nervous system. Orientation helps an athlete understand their position in space, while rhythm allows for the timing of movements. Reaction ability is crucial for responding to stimuli quickly. Maximum strength, however, is a conditional physical ability related to force production rather than the coordination of movement patterns.

39. (B) Technique is an idealized method, while skill is applying it under performance conditions.
Technique is the idealized and efficient way of performing a specific motor task based on biomechanical principles. It serves as a model that athletes strive to master through practice. A skill, on the other hand, is the ability to apply that technique effectively and consistently under the pressure and changing conditions of a competition. While technique provides the foundation, a skill represents the successful realization of that movement to achieve a specific goal during a game.

40. (C) II, III, IV, I
The process of technique development follows a logical progression from initial learning to mastery. It begins with the development of basic coordination patterns, often called gross coordination. This is followed by the refinement of the technique, or fine coordination, where errors are reduced. The next stage involves stabilization and adaptation to varied conditions, ensuring the movement is reliable. Finally, the technique becomes automated, allowing the athlete to perform it with minimal conscious effort during high-level competition.

41. (C) It ensures movement efficiency while reducing the risk of injury.
Developing a sound technique is essential because it allows athletes to perform movements with maximum efficiency, conserving energy for other demands of the sport. Proper technique also ensures that physical forces are distributed correctly across the body, which significantly reduces the risk of acute or overuse injuries. While a good technique does not guarantee victory, it provides the necessary mechanical foundation for high performance and long-term participation in competitive or recreational sports activities.

42. (A) The fine coordination stage
During the fine coordination stage of technique development, the athlete has moved beyond basic learning and begins to refine the movement. In this phase, the motor patterns become more consistent, and the learner is able to identify and correct specific errors. The movements look more fluid and coordinated compared to the initial stage. This refinement is achieved through focused practice and feedback, leading toward the eventual stabilization and automation of the skill for use in competition.

43. (D) Strategy is a long-term seasonal plan, while tactics are specific game actions.
Strategy and tactics are related but distinct concepts in sports planning. Strategy refers to the long-term, overall plan designed to achieve a major goal, such as winning a championship over a season. Tactics are the specific, short-term actions and decisions made during a game to handle particular situations or opponents. While strategy provides the broad framework, tactics are the practical tools used to execute that plan on the field or court during a specific event.

44. (B) A specific tactic
A full-court press in basketball is a specific tactical decision made to pressure the opposing team and potentially regain possession in the closing minutes of a game. It is a targeted action used to address a particular situation during a match. This distinguishes it from a long-term strategy or a broad training plan. Tactics like this are essential tools that coaches and players use to influence the immediate outcome of a competitive sporting event.

45. (A) Both A and R are true and R is the correct explanation of A.
Planning is a fundamental component of modern sports training as it provides a structured roadmap for achieving an athlete's long-term objectives. By organizing training content, selecting appropriate methods, and managing training loads, a well-developed plan ensures that every session contributes toward the final goal. This systematic approach allows for the efficient use of time and resources, helping to prevent overtraining while ensuring that the athlete peaks at the right time for major competitions.

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46. (D) Systematization and continuity
Effective planning in sports training is guided by principles that ensure the process is organized and productive. Systematization involves arranging training elements in a logical order to build toward specific goals. Continuity ensures that training is a regular and ongoing process, as gaps can lead to a loss of fitness gains. These principles help create a stable environment for

highly functional in sports as it demonstrates the athlete's ability to use their range of motion during actual physical performance and active movements.

77. (C) Males are naturally more flexible than females on average.
Flexibility development is influenced by several factors, including muscle temperature and regular practice. It is well-established that females generally tend to be more flexible than males due to differences in hormonal levels and connective tissue structure. Stretching is most effective when muscles are warm, and consistent training is necessary to prevent the natural decrease in flexibility that occurs with aging. Understanding these biological trends helps in designing appropriate stretching routines for individuals based on their age and gender.

78. (B) i, ii, iii, and iv
Coordinative abilities serve as the foundation for learning and performing complex motor skills. These abilities, which include balance, rhythm, and differentiation, are heavily influenced by the functioning of the central nervous system. They are best developed through exposure to varied and challenging motor tasks during training. While genetic factors play a role, coordinative abilities are highly trainable, especially during childhood and adolescence. They are not entirely fixed and can be significantly improved through structured and diverse movement experiences.

79. (A) Balance and orientation abilities
The execution of complex spins and jumps in figure skating requires a high level of balance and orientation abilities. Balance allows the skater to maintain equilibrium while rotating and landing on a narrow blade, while orientation helps them understand their position in space during rapid movements. These coordinative capacities are essential for maintaining control and stability during high-speed, technical maneuvers. Developing these abilities involves specialized training that challenges the nervous system to process sensory information and regulate muscle actions precisely.

80. (A) III, IV, II, I
Training planning is organized into cycles of varying durations to manage preparation effectively. The shortest unit is a single training session. These sessions are grouped into a microcycle, which typically lasts about one week. Multiple microcycles form a mesocycle, lasting several weeks to a few months. Finally, several mesocycles make up a macrocycle, which represents the overall long-term plan for a season or year. This hierarchical structure ensures that short-term tasks are aligned with long-term performance goals.

81. (B) Learning, refining, and automating an ideal model of motor action.
Technique training is a specialized part of sports preparation focused on the acquisition and perfection of specific movement patterns. The goal is to learn and refine an idealized model of motor action based on biomechanical principles. Through repetitive practice and feedback, the athlete strives to automate these movements so they can be performed efficiently and consistently. Unlike general fitness training, technique training targets the quality and mechanics of the sport-specific skills required for successful performance in competition.

82. (A) A tactic
In team sports, a tactic is a specific, pre-planned set of actions designed to achieve an advantage or counter an opponent's strengths during a match. Tactics involve making decisions about player positions, movement patterns, and responses to game situations. While a strategy provides the overall long-term direction, tactics are the practical, short-term applications used on the field. Effective tactical planning requires a deep understanding of the game and the ability to adapt to the opponent's behavior during competition.

83. (C) It ensures that training is objective-driven and progress can be monitored.
Planning is vital in sports because it ensures that the training process is purposeful and aligned with specific objectives. A well-structured plan provides a clear framework for coaches and athletes to follow, making it easier to monitor progress and make necessary adjustments over time. By defining goals and the steps to reach them, planning helps optimize the use of training time and resources. It transforms a series of individual workouts into a cohesive and effective long-term development strategy.

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intensity remains high to simulate competitive conditions. The goal is to ensure the athlete is in peak form for major events. Developing basic, general physical qualities is the primary focus of the preparatory period, not the competition period, which emphasizes performance and results.

55. (D) Psychological and physiological rest and recovery.
The transitional period follows the completion of the competition season and is dedicated to psychological and physiological rest. Its main purpose is to allow the athlete's body and mind to recover from the stresses of high-intensity training and competing. This period typically involves active rest, where the athlete participates in low-intensity recreational activities instead of their primary sport. Proper regeneration during this phase is crucial for preventing burnout and preparing the athlete for the next training cycle.

56. (A) Qualifying competition
A qualifying competition is used to determine which athletes or teams are eligible to participate in a main event or championship. Its purpose is to narrow down a large field of competitors to a smaller, more elite group. These competitions ensure that the final event features the highest level of performance. Athletes must perform well enough to meet specific standards or rankings to progress, making these events a critical step in the competitive process.

57. (C) Talent identification
Talent identification is the systematic process of screening and selecting individuals who demonstrate the potential to achieve high levels of performance in a specific sport. This involves evaluating various factors such as physical attributes, physiological capacity, technical skills, and psychological traits. By identifying promising athletes at an early stage, sports organizations can provide them with the specialized training and support necessary to reach their full potential. It is an essential component of long-term athlete development programs.

58. (C) i, ii, iii, and iv
Talent identification involves several stages to accurately assess an individual's potential. It typically begins with a general screening of a large population for basic physical traits. This is followed by sport-specific testing and observation of performance during training and competition. Psychological and social assessments are also conducted to evaluate an athlete's mental resilience and support system. Immediate selection for national teams without development is not part of this systematic process, as long-term training is always required for success.

59. (D) Initial detection or screening
Initial detection or screening is the first stage of the talent identification process, where a large group of individuals is assessed based on general physical and physiological attributes. In this example, measuring the height, speed, and jumping ability of 12-year-olds helps identify those with the natural qualities suited for various sports. This broad evaluation provides a starting point for directing potential athletes toward sports where their physical characteristics may give them a competitive advantage in the future.

60. (A) Both A and R are true and R is the correct explanation of A.
The principle of progression is essential in sports training to ensure that an athlete continues to make improvements. As the body adapts to a specific training load, that load eventually becomes insufficient to stimulate further physiological changes. To avoid reaching a performance plateau, the training stimulus must be gradually increased in terms of volume, intensity, or complexity. This systematic advancement keeps the body challenged, leading to continuous adaptations and higher levels of athletic performance over time.

61. (C) The duration or quantity of work performed.
The volume of a training load refers to the total quantity of work performed during a training session or over a specific period. It is typically measured in terms of distance covered, total weight lifted, number of repetitions, or the duration of the activity. Increasing volume is a common way to build an athlete's physical foundation, particularly in endurance-based sports. Volume works alongside intensity to determine the overall demand placed on the athlete's body during their preparation.

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rest before starting the next cycle. This structure ensures peak performance.

16. (B) Muscle cross-sectional area
A primary physiological determinant of muscular strength is the cross-sectional area of the muscle fibers. Generally, a larger muscle mass allows for the generation of greater force because it contains more contractile proteins. When an individual undergoes resistance training, the muscles often experience hypertrophy, which increases their size and their capacity to overcome external resistance. Other factors, such as fiber type and neural coordination, also play significant roles in determining an individual's overall strength.

17. (B) Endurance
Endurance is the physical capacity to sustain a specific level of activity for an extended period without experiencing excessive fatigue. It depends on the efficiency of the cardiovascular and respiratory systems to deliver oxygen to working muscles and the muscles' ability to utilize that oxygen. This component is vital for long-duration sports and activities that require repeated movements. Developing endurance involves training the body to manage energy production and waste removal over long durations of time.

18. (A) i, ii, and iii are correct.
Strength can be developed through various types of exercises based on muscle action. Isometric exercises involve contraction without visible joint movement or change in muscle length. Isotonic exercises involve constant tension as the muscle changes length through a range of motion. Isokinetic exercises utilize specialized equipment to maintain a constant speed of movement. These methods are distinct from plyometrics, which focus on explosive power, and circuit training, which is an effective method for developing strength endurance.

19. (C) Long-term endurance
Long-term endurance is primarily supported by the aerobic energy system, which uses oxygen to convert nutrients into fuel for muscular work. This type of endurance is essential for activities lasting longer than several minutes, where the body must maintain a steady state of oxygen consumption. Unlike short-term efforts that rely on anaerobic pathways, long-term activities require efficient cardiorespiratory function and the ability of muscles to sustain work through continuous oxygen-dependent metabolic processes.

20. (A) Both A and R are true and R is the correct explanation of A.
The principle of specificity dictates that training adaptations are highly specific to the type of stimulus applied. To improve strength in a particular muscle group or for a specific movement pattern, the training exercises must directly target those areas. This ensures that the physiological and neural adjustments occur where they are most needed for performance. Following this principle allows athletes to maximize the transfer of training gains to their actual sporting movements and competitive requirements.

21. (C) Basic endurance
Basic endurance refers to the ability to perform a whole-body activity of low to moderate intensity for a very long duration. For a marathon runner, this is the most critical fitness component as it allows them to maintain a consistent pace over several hours. It relies heavily on the aerobic system's efficiency in providing energy and the body's ability to resist fatigue during prolonged exertion. Developing this base is fundamental for all long-distance athletes.

22. (B) Maximum voluntary contraction force
Endurance capacity is determined by factors that influence oxygen delivery and utilization, such as VO_2 max and lactate threshold. The composition of muscle fibers, specifically the proportion of slow-twitch fibers, also significantly affects how long an athlete can sustain work. In contrast, maximum voluntary contraction force is a measure of absolute strength rather than the ability to resist fatigue over time. While strength can support endurance, it is not a direct determinant of aerobic capacity.

23. (D) Continuous method
The continuous method of training involves performing a physical activity at a steady, unchanging pace for a long period without any rest intervals. This approach is highly effective for improving cardiovascular health and developing

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oxygen and the muscles' ability to use it to produce energy. It is a fundamental component for long-duration activities like marathon running or distance swimming. Developing aerobic endurance involves training that improves the cardiorespiratory system and metabolic processes within the muscle fibers.

70. (B) Isokinetic Method
Primary methods for developing endurance include the continuous method, the interval method, and the Fartlek method, each varying in how work and rest are organized. These methods focus on the cardiovascular and metabolic systems. The isokinetic method, however, is a specialized type of strength training that utilizes machines to maintain a constant speed of movement throughout a range of motion. While it involves muscular effort, it is not primarily used for building cardiovascular or aerobic endurance capacity.

71. (D) The interval method
The interval method is a training approach that alternates periods of high-intensity work with planned periods of rest or lower-intensity recovery. This structure allows athletes to accumulate a larger volume of high-quality work than they could in a single continuous effort. By manipulating the intensity, duration, and rest periods, coaches can target specific energy systems, such as aerobic or anaerobic capacity. It is a highly effective method for improving both speed and cardiovascular endurance in various sports.

72. (A) The ability to cover a distance or perform a movement in a minimal amount of time.
The primary characteristic of speed is the ability to execute a motor action or travel across a specific distance in the shortest possible time. It is a fundamental motor quality that relies on the rapid firing of neural signals and the explosive contraction of fast-twitch muscle fibers. Unlike endurance, which focuses on resisting fatigue, or flexibility, which involves range of motion, speed is defined by velocity. It is critical for success in many competitive sports requiring quick movements.

73. (C) Reaction speed
Reaction speed is the time that elapses between the presentation of a stimulus, such as the sound of a starter's gun, and the very first initiation of a physical response. It is a critical component in sports where timing and quick responses are essential, such as sprinting, goalkeeping, or martial arts. Reaction speed is primarily determined by the efficiency of the nervous system in processing sensory information and sending signals to the muscles to begin the action.

74. (A) Acceleration speed
Acceleration speed is the capacity to increase velocity quickly from a stationary position. Drills that require athletes to sprint short distances from different starting positions are specifically designed to improve this ability. These exercises force the athlete to generate maximum power and apply force effectively against the ground to overcome inertia. By practicing these explosive starts, athletes can reach their top speed more rapidly, which is a major advantage in sports like football, basketball, and competitive sprinting events.

75. (A) P-3, Q-4, R-2, S-1
Different fitness components are developed using specific training modalities. Endurance is often improved through interval training, which alternates work and rest. Strength can be enhanced using isotonic contractions during resistance exercises. Speed-related power is frequently developed through plyometrics, which utilize explosive movements. Flexibility is commonly improved using techniques like PNF stretching, which involves both stretching and muscle contraction. Understanding these relationships allows for the creation of well-rounded training programs tailored to an athlete's specific needs and sporting goals.

76. (B) The contraction of the agonist and relaxation of the antagonist muscles.
Active flexibility is the range of motion an individual can achieve using only their own muscular strength without any external assistance. It is reached through the controlled contraction of the agonist muscles, which perform the movement, and the simultaneous relaxation of the antagonist muscles, which are being stretched. This type of flexibility is

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62. (D) Density: Frequency of training sessions per week
Training load parameters are specific measures used to define the nature of a workout. Intensity relates to the quality or speed of work, and volume represents the total quantity. Frequency refers to the number of sessions in a given timeframe. Density, however, describes the relationship between the duration of work and the duration of rest within a session, rather than the number of sessions per week. Understanding these distinctions is vital for coaches when designing effective and balanced training programs.

63. (A) Density
Density is a feature of training load that describes the time relationship between the work phases and the rest or recovery phases within a single training session. High density means shorter rest periods relative to the work done, which increases the overall demand on the athlete's systems. Low density provides more recovery time between efforts. By manipulating density, coaches can target different physiological systems and adapt the training to specific competitive requirements or fitness goals for the athlete.

64. (B) Introducing an extra rest day or reducing the volume of the next session.
When an athlete shows early signs of overload, such as unusual fatigue, it is essential to adjust the training plan immediately to prevent the condition from worsening. Introducing an extra rest day or reducing the volume of the next training session provides the body with the necessary time to recover and adapt. This proactive approach helps restore the balance between training stress and regeneration. Ignoring these symptoms can lead to chronic overtraining and a significant decline in performance.

65. (B) Strength endurance
Strength endurance is the ability of a muscle or muscle group to exert force repeatedly or sustain a specific level of force over a prolonged period. This quality is essential in sports that require continuous muscular effort, such as rowing, swimming, or long-distance cycling. It involves both the capacity to produce force and the ability to resist fatigue within the working muscles. Developing strength endurance requires training with moderate loads and high repetitions to improve local muscular efficiency and metabolism.

66. (A) Isometric
Isometric contraction occurs when a muscle generates force without changing its length or causing visible movement at the joint. Pushing against an immovable object, like a wall, is a classic example of this type of exercise. While the muscles are under significant tension, the external resistance cannot be overcome, resulting in a static contraction. Isometric training can be useful for developing strength at specific joint angles and is often used in rehabilitation and certain specialized sports training programs.

67. (C) Psychological factors like motivation can influence the expression of strength.
While physiological components like muscle size and fiber type are fundamental determinants of strength, psychological factors also play a significant role. Motivation, focus, and the ability to tolerate discomfort can influence how much force an individual is able to express during a voluntary contraction. Mental states can impact the nervous system's ability to recruit motor units and synchronize muscle actions. Therefore, an athlete's overall strength performance is a combination of their physical capacity and their psychological readiness.

68. (C) i, ii, and iii
Several established methods are used to develop different types of strength. Weight training is a primary method for increasing absolute and maximum strength. Circuit training is effective for building strength endurance through a series of exercises with minimal rest. Plyometrics focus on developing explosive strength and power by utilizing the stretch-shortening cycle of muscles. While static stretching is important for flexibility, it is not a recognized method for increasing the force-generating capacity of muscles during training.

69. (C) The body's ability to supply sufficient oxygen to the working muscles for an extended period.
Aerobic endurance is the body's ability to maintain a physical activity by supplying sufficient oxygen to the working muscles over an extended period. This capacity depends on the efficiency of the heart and lungs to transport

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84. (D) A long-term perspective plan
A long-term perspective plan is designed to outline the goals and training structure over an extended period, such as a four-year Olympic cycle. This type of plan provides a broad overview of the athlete's development, focusing on major milestones and the gradual progression of physical and technical capacities. It serves as a strategic guide for coaches to ensure that the athlete reaches their peak potential for major international events while allowing for sustainable long-term growth and success.

85. (C) A is true but R is false.
A well-developed technique is essential for high performance because it maximizes movement efficiency and minimizes energy expenditure. By following correct biomechanical principles, an athlete can achieve better results with less physical effort. However, the idea that technique relies on outdated principles is incorrect; modern sports science continuously updates our understanding of optimal movement patterns. Therefore, athletes and coaches must stay informed about current research to refine techniques and maintain a competitive advantage in their respective sports disciplines.

86. (B) To manage fatigue and prevent overload
One of the critical objectives of periodization is to manage the athlete's fatigue and prevent the negative consequences of overtraining or overload. By systematically varying training intensity and volume, and including planned recovery periods, periodization ensures that the body has time to adapt and regenerate. this structured approach helps maintain the athlete's health and motivation while reducing the risk of injuries caused by excessive stress. Balancing hard work with adequate rest is essential for long-term athletic success and well-being.

87. (D) Double periodization
Double periodization is a training structure that involves two major competitive peaks within a single year. This model is ideal for athletes who need to be in top form for two separate significant tournaments, such as an indoor and an outdoor season. The year is divided into two complete cycles, each containing its own preparatory, competition, and transitional periods. This allows the athlete to build fitness, peak for the first event, recover briefly, and then build toward the second major peak.

88. (A) Development of a broad, all-round fitness base.
The General Preparatory phase is the initial part of the preparatory period, where the primary goal is to develop a broad and solid foundation of physical fitness. During this phase, training focuses on improving general qualities such as aerobic endurance, basic strength, and overall mobility. These attributes are not yet sport-specific but provide the necessary physiological base to support more intense and specialized training later in the year. A strong general base is essential for preventing injuries and achieving long-term performance gains.

89. (C) Volume decreases, Intensity increases.
As an athlete moves from the preparatory period into the competition period, the training structure shifts to emphasize performance readiness. This transition typically involves a decrease in training volume to reduce fatigue and allow for recovery. Simultaneously, the training intensity increases to simulate the high demands of competitive events and to refine sport-specific skills. This combination of lower volume and higher intensity helps the athlete achieve their peak form and maintain the necessary speed and power for major competitions.

90. (A) Guaranteeing an athlete a place on a future Olympic team based on early results.
Talent identification and development involve assessing an individual's current attributes and potential for future success. This includes evaluating physical, physiological, and psychological characteristics through reliable testing. While identifying potential is possible, guaranteeing a spot on a future elite team is not a legitimate part of the process, as athletic development depends on many factors, including long-term commitment, injury avoidance, and continued improvement. The focus should remain on providing the necessary support and training for promising athletes to reach their full potential.

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91. (D) The body adapts by rebuilding to a level higher than before the training stimulus.
Supercompensation is the biological process where the body adapts to a training stimulus by rebuilding itself to a level of fitness higher than before the workout. When a training load is applied, the body experiences fatigue and a temporary decline in capacity. During the subsequent recovery period, the body compensates for the stress by strengthening tissues and replenishing energy stores beyond their original state. This process is the foundation of physical improvement and is why balanced training and rest are essential.

92. (B) Loss of motivation and concentration
Psychological overload occurs when the mental stresses of training and competition exceed an athlete's ability to cope. Common symptoms include a significant loss of motivation, difficulty concentrating, increased irritability, and feelings of burnout. These signs indicate that the athlete is mentally fatigued and may need a break or a change in their training routine. Addressing psychological symptoms is just as important as managing physical fatigue to ensure long-term athletic success and maintain the athlete's passion for their sport.

93. (C) i, ii, and iii are correct.
Training loads must follow scientific principles to be effective. The load must be progressive, meaning it should increase over time to ensure the body continues to adapt and improve. It must also be specific to the athlete's goals and the demands of their sport. Furthermore, training loads should be individualized, taking into account each person's unique capacity and response to stress. Keeping a training load constant throughout a career would lead to plateaus and a lack of further performance gains.

94. (D) Maximum strength
Maximum strength is defined as the highest level of force an individual can exert during a single voluntary muscle contraction. It represents the upper limit of the neuromuscular system's force-generating capacity. This component is typically measured using one-repetition maximum tests in exercises like the squat or bench press. While other types of strength involve speed or duration, maximum strength is focused solely on the magnitude of the force produced. It provides the foundation for other physical qualities like power and strength endurance.

95. (A) Energy production without the immediate use of oxygen.
In the context of endurance, anaerobic refers to energy production processes that do not rely on the immediate use of inhaled oxygen. This occurs during high-intensity, short-duration activities where the body's demand for energy exceeds its ability to supply oxygen to the muscles. Anaerobic pathways, such as the breakdown of stored glycogen, provide quick energy but lead to the accumulation of byproducts like lactate. Developing anaerobic endurance allows athletes to perform intense bursts of effort and maintain high speeds for short periods.

96. (B) Short-term anaerobic endurance
A 400-meter sprint is an intense event lasting approximately 45 to 60 seconds, which primarily relies on short-term anaerobic endurance. During this time, the body must produce energy rapidly without sufficient oxygen, leading to high levels of muscular fatigue and lactate accumulation. The athlete's ability to maintain a high speed despite these physiological stresses is the key to success. This type of endurance is distinct from long-term aerobic endurance, which supports activities lasting many minutes or hours at lower intensities.

97. (B) Responding to unpredictable light or sound signals
Reaction speed is the ability to respond as quickly as possible to a stimulus. Training methods for this quality involve drills where an athlete must react to unpredictable signals, such as lights, whistles, or movements. By repeatedly practicing quick responses to these cues, the nervous system becomes more efficient at processing information and initiating motor actions. This type of training is highly specific and is essential for athletes in sports like sprinting, martial arts, and goalkeeping where reaction time is critical.

98. (A) Long, slow distance running is the best way to improve maximum sprinting speed.
Speed development requires high-intensity training focused on the nervous system and fast-twitch muscle fibers. Long, slow distance

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running is an effective method for building aerobic endurance, but it does not improve maximum sprinting speed. In fact, excessive slow running can potentially hinder speed gains by training the body for different metabolic and neural requirements. Effective speed training should involve short, explosive efforts performed when the athlete is fresh, allowing for maximum velocity and proper technique to be maintained during each repetition.

99. (C) Passive flexibility
Passive flexibility is the range of motion that can be achieved at a joint with the assistance of an external force. This force can come from a partner, a piece of equipment, or gravity. Because the muscles being stretched are relaxed and not actively contracting to reach the position, the range of motion is typically greater than in active flexibility. Passive stretching is a common method used to increase long-term flexibility and is an important part of overall athletic preparation and recovery.

100. (C) P-4, Q-2, R-1, S-3
Different motor abilities are demonstrated in various sporting tasks. Coordinative ability is shown in complex actions like dribbling a football while moving. Endurance is the primary quality needed for long-duration events such as running a marathon. Strength is represented by the capacity to lift a heavy weight, like a barbell. Speed is the ability to perform an action rapidly, exemplified by a 100-meter sprint. Understanding these examples helps clarify how each physical and coordinative component contributes to different types of athletic performance.

101. (C) Kinesthetic differentiation ability
Kinesthetic differentiation ability is a coordinative capacity that allows an athlete to achieve a high degree of precision and economy in their movements. It involves the subtle control of muscular force and the precise timing of actions based on sensory feedback from the muscles and joints. This ability is essential in sports requiring fine motor control, such as archery, shooting, or golf. By refining this capacity, athletes can perform complex tasks with greater accuracy and less wasted effort, leading to improved performance.

102. (B) The automation stage
In the automation stage of technique development, the athlete has achieved a high level of mastery over the motor skill. The movements are performed with great fluidity, precision, and seemingly minimal effort. At this stage, the execution of the technique requires very little conscious thought, allowing the athlete to focus on other aspects of performance, such as tactics or strategy. This level of proficiency is reached through extensive practice and refinement, ensuring the skill remains stable even under competitive pressure.

103. (B) i, ii, iii, and iv
Strategy and tactics are fundamental concepts in sports planning and performance. Strategy represents the overall game plan or long-term objective, such as deciding how to approach an entire season. Tactics are the specific actions and decisions made to execute that strategy during a competition. For example, choosing a defensive formation is a tactic, while a plan to avoid injuries across the year is a strategy. These two concepts are deeply interconnected, as effective tactics are necessary to successfully realize a broader strategy.

104. (A) Retrospective Plan
Planning in sports training is categorised based on the duration of the training period. Macrocycle plans cover several months to a year, mesocycles span several weeks, and microcycles typically last one week. These are all forward-looking plans designed to guide future preparation. A retrospective plan is not a recognized type of training planning, as the term implies looking back at past events. While reviewing previous performance is important for evaluation, it does not constitute a formal training plan for upcoming development.

105. (C) Explosive flexibility
Flexibility is generally classified into active, passive, and dynamic types based on how the range of motion is achieved. Active flexibility involves using one's own muscle power, while passive flexibility relies on external assistance. Dynamic flexibility refers to the range available during movement. Explosive flexibility is not a standard term used in sports science, as explosive qualities are associated with power and strength.

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120. (A) II, III, I, IV
A 100-meter sprint involves a specific sequence of speed-related abilities. It begins with reaction speed, which is the response to the starter's gun. This is immediately followed by acceleration speed as the athlete increases velocity over the first 30 meters. Then, locomotor speed is used to maintain the maximum velocity achieved. Finally, speed endurance is required to resist deceleration and maintain as much speed as possible in the closing meters of the race despite the onset of fatigue.

121. (C) Endurance
The Fartlek method, which means "speed play" in Swedish, is an endurance training technique that involves alternating the pace of running over varied terrain. Unlike traditional interval training with fixed recovery periods, Fartlek is less structured and allows the athlete to vary their effort based on how they feel or the natural features of the landscape. This method is effective for developing both aerobic and anaerobic capacity, helping athletes improve their overall endurance and adapt to the changing demands of competitive sports.

122. (A) It is a complex ability influenced by strength, coordination, and neural factors.
Speed is a complex motor ability that is influenced by multiple factors, including muscular strength, coordination, and neural efficiency. It is not just about moving quickly; it also depends on the rate at which the nervous system can send signals to the muscles and the ability of those muscles to contract explosively. While speed can be improved through specific training, it is also significantly limited by genetic factors like muscle fiber type. Successful speed development requires a comprehensive and scientific approach to training.

123. (D) Movement speed
Movement speed is the ability to perform a single, discrete motor action in the minimum possible time. Examples include the speed of a single punch in boxing, a kick in karate, or a throw in baseball. This quality is distinct from reaction speed, which focuses on the start of the action, or locomotor speed, which involves continuous movements like running. High movement speed depends on the rapid recruitment of motor units and the explosive contraction of the specific muscles involved in the action.

124. (B) Maximum oxygen uptake (VO_2 max)
Speed is primarily determined by neural and muscular factors such as fiber type, neuromuscular efficiency, and biomechanical technique. These elements influence how quickly an athlete can generate force and execute movements. While VO_2 max is a critical determinant of aerobic endurance, it has very little influence on an individual's maximum sprinting speed or explosive power. High-speed efforts are brief and rely on anaerobic energy pathways rather than the long-term oxygen uptake and utilization measured by VO_2 max.

125. (A) P-3, Q-2, R-4, S-1
Key concepts in sports training are defined by their specific roles in the preparation process. Overload occurs when excessive stress is applied without sufficient recovery. Adaptation is the positive physiological change the body undergoes in response to training. Periodization is the planned variation of training factors like volume and intensity to optimize performance. Technique represents the idealized model for performing a specific movement pattern. Understanding these definitions is essential for coaches and athletes to manage the training process effectively and achieve their goals.

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126. (D) Dynamic-Active
A high kick performed by a ballet dancer is an example of dynamic-active flexibility. This type of flexibility involves reaching a large range of motion during a movement using only the strength of the active muscles. The dancer uses the contraction of their own muscles to lift and control the leg through its full range. Unlike passive flexibility, which uses external force, dynamic-active flexibility requires both the elasticity of the tissues and the strength to move the limb through that range of motion.

127. (A) The strength of the muscle
Flexibility is primarily determined by the structural and physiological characteristics of the joints and surrounding tissues. Factors such as the type of joint, the elasticity of tendons and ligaments, and the temperature of the muscles significantly influence the available range of

capacities, leading to sustainable performance improvements.

113. (B) Overload
The symptoms of persistent fatigue, an increased resting heart rate, and a decline in performance despite continued training effort are classic indicators of overload or overtraining. This state occurs when the training stress placed on an athlete exceeds their capacity to recover and adapt. Overload affects both the physiological and psychological systems, leading to a breakdown in the body's homeostatic balance. Recognizing these signs early is crucial for coaches to adjust training loads and provide the necessary rest for recovery.

114. (A) Strength
Strength is the physical motor ability that defines a muscle's capacity to exert force against an external resistance. It is a fundamental component of physical fitness that allows athletes to perform movements such as lifting, pushing, or pulling. Strength is determined by factors like muscle size, fiber type, and the ability of the nervous system to recruit motor units. Developing strength is essential for improving performance in many sports and contributes to overall physical health, movement efficiency, and injury prevention in daily activities.

115. (C) Maximum strength
A one-repetition maximum (1RM) squat is a direct measure of an individual's maximum strength. This is the greatest amount of weight a person can lift for a single successful repetition with proper form. It represents the peak force-generating capacity of the muscle groups involved in the movement. While other types of strength focus on speed or sustaining efforts, maximum strength is about the magnitude of the resistance that can be overcome in a single voluntary muscular effort.

116. (D) Intra- and inter-muscular coordination
The nervous system plays a vital role in determining strength through intra- and inter-muscular coordination. Intra-muscular coordination refers to the ability to recruit a large number of motor units within a single muscle simultaneously. Inter-muscular coordination involves the synchronized action of different muscle groups to perform a movement efficiently. Improving these neural factors allows an individual to express more force without necessarily increasing muscle size. Training the nervous system to fire more effectively is a key part of strength development.

117. (C) The ability to resist fatigue.
Endurance is primarily characterized by the ability of the body to resist fatigue and sustain a physical activity for a prolonged period. It involves the coordinated functioning of the cardiovascular, respiratory, and muscular systems to maintain energy production over time. While other qualities like speed or strength focus on intensity and force, endurance emphasizes duration and the capacity to keep going despite the onset of tiredness. This ability is essential for success in long-duration sports and general physical health.

118. (B) i, ii, and iii
Endurance is categorized based on the energy systems and physical demands of the activity. Aerobic endurance relies on oxygen for long-duration efforts, while anaerobic endurance supports high-intensity work without sufficient oxygen. Speed endurance is the specific ability to maintain a near-maximum velocity despite fatigue. While reaction is a motor quality related to speed, "reaction endurance" is not a standard term used in sports science. Understanding these distinct types of endurance helps in designing specific training programs to meet different sporting requirements.

119. (D) The maximum rate at which the body can take up and use oxygen.
VO_2 max is a physiological measure that represents the maximum rate at which an individual's body can take up, transport, and utilize oxygen during intense physical activity. It is widely considered the gold standard for assessing aerobic endurance and cardiovascular fitness. A higher VO_2 max indicates a greater capacity for the body to produce energy aerobically, allowing an athlete to sustain high-intensity work for longer periods. It is influenced by genetic factors, as well as the efficiency of the heart and muscles.

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149. (C) The recruitment and synchronization of motor units.
Strength is determined by both physical muscle characteristics and neural factors that control muscle action. A key neural factor is the recruitment and synchronization of motor units. This refers to the ability of the nervous system to activate a large number of motor units simultaneously and in a coordinated manner to produce force. Improving this neural efficiency allows an individual to generate more strength without necessarily increasing the cross-sectional area of their muscles. Training the brain-muscle connection is fundamental to strength development programs.

150. (B) P-3, Q-1, R-2, S-4
Periodization phases are structured to focus on specific training objectives as the competition season approaches. The general preparatory phase is dedicated to all-round physical development, while the specific preparatory phase shifts toward sport-specific fitness and technique refinement. During the pre-competition phase, the focus is on tapering and peaking to ensure the athlete is in optimal form. Finally, the main competition phase is about maintaining that peak form and executing tactics effectively. This progression ensures the athlete is prepared for high-level performance.

151. (D) The ability to withstand fatigue.
The fundamental characteristic of endurance is the body's ability to withstand fatigue and sustain a physical activity for an extended period. It is a key motor quality that depends on the efficiency of the cardiovascular, respiratory, and metabolic systems to provide energy and manage waste products during prolonged exertion. While other abilities like speed or strength are measured by velocity or force, endurance is measured by duration. It is essential for success in sports requiring long-term effort and for maintaining overall physical health.

152. (A) A 200m swim
A 200-meter swim is an example of an activity that relies heavily on anaerobic endurance. This event is intense and typically lasts between two to three minutes, which means the body's demand for energy exceeds its ability to supply it through oxygen alone. The muscles must use anaerobic energy pathways, leading to high levels of lactate and rapid fatigue. The ability to maintain speed despite these physiological challenges is the essence of anaerobic endurance. Longer events like a 10km run are primarily aerobic.

153. (A) i, ii, and iv
Endurance is developed using several established training methods. The continuous method involves prolonged, uninterrupted activity at a steady pace. The interval method alternates high-intensity work with planned recovery periods to target specific energy systems. For aerobic improvements, it is essential to elevate the heart rate into a target training zone. While Fartlek is also an endurance method, it is characterized by its lack of structure and varied pace. Endurance training primarily targets slow-twitch muscle fibers, which are better suited for resisting fatigue.

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154. (A) Reaction speed
For a goalkeeper in football, reaction speed is the most critical type of speed ability. It represents the capacity to respond as quickly as possible to a visual stimulus, such as the ball being kicked toward the goal. Goalkeepers must make split-second decisions and initiate movements to make a save. While other types of speed like acceleration or locomotor speed are important for outfield players, the specialized role of the goalkeeper relies heavily on the efficiency of the nervous system to react to unpredictable shots.

155. (D) High levels of aerobic endurance are the primary determinant of sprinting speed.
Speed is a complex quality determined by factors such as muscle fiber type, flexibility, and the efficiency of the central nervous system. A higher proportion of fast-twitch fibers and good range of motion are beneficial for generating high velocity. However, it is incorrect to say that high levels of aerobic endurance are the primary determinant of sprinting speed. Aerobic endurance supports long-duration activities, whereas sprinting is an anaerobic, explosive effort that relies on different metabolic processes and neural patterns than those used for endurance.

156. (B) Explosive power, which is critical for acceleration
Plyometric exercises, such as box jumps, are designed to improve an athlete's explosive

motion. While muscular strength is a separate and important physical component, the absolute strength of a muscle does not directly determine or limit its ability to be stretched. In some cases, very large muscle mass can even physically limit the range of motion.

128. (B) ii and iv
Flexibility development involves specific techniques to safely and effectively increase the range of motion. PNF stretching is an advanced method that combines muscle contraction and passive stretching to achieve greater gains. Static stretching, where a position is held for 15 to 30 seconds, is a widely used and effective technique for most individuals. Bouncing or ballistic stretching is generally discouraged due to a higher risk of injury. Furthermore, stretching is most effective when muscles are warm, and gains require regular maintenance.

129. (B) Coordinative abilities
Coordinative abilities are the capacities that allow an athlete to synchronize the movements of different body parts and adjust them according to their surroundings. These abilities, governed by the central nervous system, are essential for performing complex motor skills with precision and fluidity. They enable an athlete to react to stimuli, maintain balance, and adapt their actions to the dynamic conditions of competitive sports. Developing strong coordinative abilities is fundamental for achieving high levels of technical proficiency and overall athletic performance.

130. (A) Orientation and Differentiation
A basketball player dribbling while observing the court relies on orientation and differentiation abilities. Orientation helps the player understand their position relative to the basket, teammates, and opponents. Differentiation allows them to control the ball with precise, fine motor adjustments of the hands while simultaneously performing the larger movements of running. These coordinative capacities enable the athlete to process complex sensory information and execute multiple tasks efficiently, which is a hallmark of high-level skill in team sports.

131. (C) Practicing juggling with balls of different sizes and weights.
Juggling with balls of different sizes and weights is an excellent example of training designed to improve coordinative abilities. This task requires the nervous system to process changing information and adjust motor commands with precision and timing. It challenges an individual's kinesthetic differentiation and reaction abilities. Unlike simple, repetitive exercises, varied and complex motor tasks force the brain and muscles to work together in new ways, which is the most effective method for enhancing an athlete's overall coordination and motor control.

132. (D) The ability to achieve a goal with maximum certainty and efficiency.
In the context of sports, a skill is the learned ability to achieve a specific performance goal with maximum certainty and efficiency. It involves the successful application of technique under various conditions to produce a desired outcome. A skilled athlete can perform complex actions consistently and with minimal wasted energy, even under the pressure of competition. Skill acquisition is a long-term process that requires deliberate practice, feedback, and the gradual refinement of both physical and mental processes related to the sport.

133. (C) The autonomous stage (Stabilization and adaptation)
The autonomous stage is the highest level of technique development, where the athlete can perform a skill correctly and consistently, even under high pressure and variable competitive conditions. At this stage, the motor pattern is so well-learned that it requires very little conscious effort, allowing the athlete to focus on tactics and decision-making. The movement has become stabilized and highly adaptable, enabling the performer to maintain a high level of performance regardless of external distractions or the presence of opponents.

134. (B) A person can have a skill without any underlying technique.
Technique and skill are closely related concepts, but they are not the same. Technique provides the biomechanical foundation and idealized model for a movement, while skill is the ability to use that technique effectively to achieve a goal. It is

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Flexibility is defined by the range of motion at a joint rather than the speed or force of contraction.

106. (A) Muscle temperature
Muscle temperature is a primary factor that influences the elasticity and extensibility of muscular and connective tissues. As the temperature of these tissues increases, they become more pliable, allowing for a greater range of motion at the joints. This is the physiological basis for performing a warm-up before exercise or stretching. Higher muscle temperatures reduce the internal resistance to movement and decrease the risk of soft tissue injuries. Proper thermal preparation is essential for athletes to achieve their maximum flexibility during performance.

107. (D) Static-Passive flexibility
Static-passive flexibility involves holding a stretched position for a period of time using an external force to maintain the range of motion. When a gymnast holds a split on the floor, the ground and their body weight provide the necessary external force, and the muscles being stretched are relatively inactive. This type of flexibility is commonly used in long-duration stretching routines to increase the overall range of motion around a joint. It is characterized by stillness and the absence of active muscular effort.

108. (B) They are primarily dependent on the quality of motor control and regulation processes.
Coordinative abilities are the capacities that allow an athlete to execute movements with precision, fluidity, and efficiency. They are fundamentally dependent on the quality of the motor control and regulation processes within the central nervous system. These abilities enable the brain to coordinate various muscle groups to perform complex tasks effectively. Unlike physical components like strength, coordinative abilities focus on the neural management of movement. Developing these capacities is essential for learning new skills and adapting to the dynamic conditions of sports.

109. (C) Balance ability
Balance ability is the coordinative capacity to maintain or regain the body's equilibrium during static positions or dynamic movements. It requires keeping the center of gravity within the base of support through continuous muscular adjustments. This ability is vital for performance in nearly all sports, as it provides the stability needed for effective movement execution. It relies on the integration of sensory information from the vestibular, visual, and proprioceptive systems to control body position and respond to external forces during physical activity.

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110. (A) Both A and R are true and R is the correct explanation of A.
Talent identification is correctly viewed as a multi-stage, continuous process rather than a single event. This is because an individual's potential for athletic success is not static; it evolves as they grow, mature, and receive training. Regular re-evaluation at different stages of development allows coaches to monitor progress and identify those who continue to show promise. This systematic approach ensures that athletes are supported throughout their development journey and that talent is recognized as it manifests during various phases of maturation.

111. (A) The long-term physiological changes that occur in response to training stress.
The adaptation process in sports training refers to the long-term physiological and structural changes that occur in the body as it responds to the stress of repeated physical activity. When an athlete consistently applies a training load, the body adjusts by becoming stronger, more efficient, and more resilient. These changes can include increased muscle size, improved cardiovascular capacity, and enhanced neural coordination. Adaptation is the fundamental mechanism through which training leads to improved performance and higher levels of physical fitness over time.

112. (B) The principle of continuity suggests that training must be continuous to be effective.
The principle of continuity states that training must be a regular and ongoing process for it to be effective. For the body to adapt and maintain its fitness gains, the training stimulus must be applied consistently over time. Large gaps in training can lead to a reversal of the positive physiological changes achieved, a process known as detraining. By maintaining continuity, athletes ensure steady progress and the long-term development of their physical and technical

and the high-pressure, performance-focused requirements of the actual competition period.

142. (D) Using a battery of valid and reliable tests to assess relevant abilities.
A key procedure in talent identification is the use of a battery of valid and reliable tests to assess the physical, physiological, and technical abilities relevant to a particular sport. These tests provide objective data that can help predict an individual's potential for future high-level performance. Relying on scientifically sound measurements is more effective than subjective observations or focusing on current physical size alone. This systematic approach ensures that athletes are selected based on their genuine potential and suitability for long-term development.

143. (C) i, ii, and iii
Essential characteristics of sports training include it being a planned and systematic process specifically aimed at improving performance capacity. It is typically led by a coach or specialist who provides guidance, feedback, and expertise to the athlete. While training involves physical exertion, it is not limited to it; psychological preparation and technical skill development are also integral parts of the process. These combined elements ensure that the athlete's preparation is purposeful, objective-driven, and based on sound educational and scientific principles.

144. (B) By the quality or magnitude of the stimulus (e.g., speed, weight).
Intensity is a measure of the quality or difficulty of a training stimulus and is a key feature of the training load. It is generally assessed by parameters such as the speed of a run, the amount of weight lifted, or the heart rate achieved during an exercise. Unlike volume, which represents the quantity of work, intensity reflects the level of effort required to perform it. Manipulating intensity is a primary way coaches challenge an athlete's physiological and psychological systems to stimulate progress.

145. (B) The specific exercises, drills, and training modalities used.
In the context of sports training, the "means and methods" refer to the specific tools, exercises, drills, and training modalities used to apply a training load to an athlete. The means are the actual activities performed, such as weightlifting or interval runs, while the methods are the ways those activities are organized, such as the number of sets and repetitions. These elements are chosen strategically by the coach to target specific fitness components and technical skills required for the athlete's development and goals.

146. (A) Overload
Symptoms like declining performance, persistent mood changes, and a loss of appetite are potential warning signs of overload or overtraining. These indicators suggest that the athlete is struggling to recover from the stress of their current training load. Overload can have significant physical and psychological impacts, disrupting hormonal balance and overall well-being. It is important for coaches and athletes to recognize these signs early and adjust the training plan to include more rest and recovery to prevent chronic overtraining syndrome from developing.

147. (C) Balancing the relationship between training stress and recovery.
The primary goal of any remedial measure for overload is to restore the balance between training stress and the athlete's ability to recover. This involves temporarily reducing the training volume or intensity and introducing more rest and regeneration strategies. By allowing the body's systems to recover, the athlete can overcome chronic fatigue and return to a state where they can once again benefit from training. Simply pushing harder or ignoring the symptoms would only lead to further decline in performance and potential health issues.

148. (D) Performing a maximum of 20 consecutive push-ups.
Performing a maximum number of consecutive push-ups is an example of developing strength endurance. This activity requires the muscles to exert force repeatedly over a period of time until fatigue sets in. Strength endurance is a combination of muscular strength and the ability to resist fatigue, which is essential for many sports and daily activities. Unlike maximum strength, which is measured by a single effort, strength endurance focuses on the capacity to sustain muscular work through a series of repeated contractions or movements.

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incorrect to say a person can have a skill without any underlying technique, as every skilled action is built upon some form of technical pattern. Technique training aims to make movements more efficient, which then enhances the athlete's overall level of skill.

135. (D) A strategy
An overall plan to play a specific style of game, such as a possession-based approach, for an entire season is an example of a strategy. A strategy provides the long-term direction and broad goals for an athlete or team. It serves as a framework within which specific tactical decisions are made during individual matches. Strategies are developed based on the team's strengths and the requirements for success in the league or competition over a prolonged period.

136. (A) The plan must be based on scientific knowledge and best practices.
The most significant principle of planning in sports training is that the plan must be rooted in scientific knowledge and established best practices. This ensures that the training methods, loads, and sequences are effective for stimulating the desired physiological and technical adaptations. Following scientific principles like progression and specificity helps optimize the athlete's development while minimizing the risk of injury or overtraining. A scientifically-based plan provides an objective and reliable roadmap for achieving high performance in competitive sports.

137. (C) Mesocycle
A mesocycle is a medium-term training plan that typically lasts for three to six weeks. It is designed to focus on a specific training objective, such as building basic strength or improving aerobic capacity. Mesocycles provide a bridge between the short-term microcycles and the long-term macrocycle. By concentrating on a particular goal for several weeks, coaches can ensure that sufficient adaptation occurs before moving on to the next phase of the athlete's overall preparation and development process.

138. (A) Achieve and maintain peak form for major events.
The primary goal of the competition period is to ensure that the athlete reaches and maintains their peak performance level for the most important events of the season. During this phase, training is highly specialized and focuses on refining techniques, practicing tactics, and building competitive readiness. The training volume is usually reduced to manage fatigue, while the intensity remains high to simulate the demands of competition. This period is the culmination of all the preparation done in earlier phases.

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139. (D) Double periodization
An athlete who has two distinct competitive seasons in a year, such as indoor and outdoor track, would typically use a double periodization model. This approach involves dividing the year into two complete cycles, each with its own preparatory, competition, and transitional periods. This structure allows the athlete to peak twice, ensuring they are in optimal form for both major competitive blocks. It provides a balanced approach to training, performance, and recovery for sports with multi-peak requirements throughout the annual cycle.

140. (A) Both A and R are true and R is the correct explanation of A.
The preparatory period is often the longest phase in an annual training plan because it is vital for establishing a solid foundation for the athlete. During this time, the focus is on developing the general and specific physical, technical, and psychological qualities necessary for sporting success. Without this extensive groundwork, an athlete would lack the capacity to handle the intense demands of the competition period. Building a strong base ensures that high-level performance is sustainable and reduces the risk of injuries later in the season.

141. (C) Specific Preparatory Phase
The specific preparatory phase is the final part of the preparatory period, occurring just before the competition season begins. During this phase, training becomes more specialized and directly related to the specific movements and demands of the athlete's sport. The intensity typically increases, and exercises are designed to refine technical skills and build sport-specific fitness. This phase serves as a transition, bridging the gap between general physical preparation

power by utilizing the stretch-shortening cycle of the muscles. This type of training involves rapid, powerful movements that enhance the nervous system's ability to recruit motor units quickly. Developing explosive power is critical for acceleration speed, as it allows an athlete to generate maximum force against the ground to reach top speed rapidly from a stationary or slow-moving position. It is a common method for athletes in many high-speed sports.

157. (C) Dynamic flexibility
Dynamic flexibility is demonstrated when an individual moves through a large range of motion during an active physical task, such as performing a full squat. This type of flexibility requires both the elasticity of the tissues and the ability to control and use that range of motion during movement. It is highly relevant to sporting performance, where joints must often move through extensive ranges while under load or at various speeds. Dynamic flexibility is distinct from holding a static stretch without movement.

158. (D) Blood cholesterol level
Flexibility is influenced by several physiological and structural factors. Age and gender play a role, as does the specific structure of the joint and the mass of the surrounding muscles and fat. Muscle temperature is also a critical determinant of how much a tissue can stretch. However, an individual's blood cholesterol level has no direct or significant influence on the range of motion at their joints or the elasticity of their soft tissues. Flexibility is determined by localized factors related to movement and anatomy.

159. (A) A combination of passive stretching and isometric contractions.
PNF, or Proprioceptive Neuromuscular Facilitation, is an advanced stretching technique that typically involves a combination of passive stretching and isometric muscle contractions. In a common PNF routine, a muscle is stretched passively, then contracted isometrically against resistance from a partner, and then stretched again to achieve a greater range of motion. This method utilizes the body's neural reflexes to relax the muscle being stretched, leading to more significant and immediate gains in flexibility compared to standard static stretching techniques alone.

160. (A) IV, II, III, I
A logical talent development pathway typically begins with recreational sports participation in the community. From this large pool, individuals may be identified through a "Talent Search" or screening program at the school level. Those who show high potential then move on to receive specialized training and support within a club or academy environment. The final stage of this progression is achieving elite status, such as becoming a member of a national team and competing at the highest international level of their sport.

161. (B) Rhythm ability
Rhythm ability is the coordinative capacity that allows an individual to perceive an external rhythm and replicate it through their own bodily movements. For a dancer, this means performing a sequence of steps in perfect time with the music. This ability involves the precise timing and flow of muscular actions to match the tempo and structure of the auditory stimulus. Developing strong rhythm ability is essential for sports and activities where timing, coordination, and the aesthetic flow of movement are critical for success.

162. (A) By increasing the complexity and novelty of motor tasks.
Coordinative abilities are best developed by challenging the central nervous system with varied and increasingly complex motor tasks. Introducing novelty into training forces the brain and muscles to adapt to new movement patterns and environmental demands. Repeatedly performing the same mastered skill does not provide the necessary stimulus for further coordinative improvement. By practicing diverse exercises that require balance, timing, and precision, athletes can enhance their overall motor control, which provides a strong foundation for learning and perfecting sport-specific skills.

163. (C) Technique is the movement pattern, while skill is applying it successfully.
Technique is the fundamental and idealized movement pattern based on biomechanical principles that an athlete learns to perform a task. Skill, however, is the ability to apply that technique effectively and consistently in

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206. (D) Maximum strength ability
Coordinative abilities include several specific capacities such as balance, rhythm, orientation, reaction, and differentiation. These are all focused on the quality of motor control and the regulation of movement by the nervous system. Maximum strength, however, is considered a conditional physical ability related to the total amount of force a muscle can generate. While strength and coordination often work together during performance, they are categorized differently in sports science because they rely on distinct physiological and neural processes for their development.

207. (A) A technique
A technique is the idealized and highly efficient movement pattern for a specific sporting action based on established biomechanical principles. It serves as a model that athletes strive to learn and perfect through purposeful practice and refinement. Mastery of technique allows an athlete to perform skills with maximum effectiveness and minimum wasted energy. While a skill is the successful application of technique in a game, the technique itself provides the necessary mechanical foundation upon which high-level athletic performance is built.

208. (B) Allows for the most efficient production of force and movement.
The primary importance of having a sound technique is that it allows for the most efficient production of force and execution of movement. By following correct biomechanical principles, an athlete can achieve better performance outcomes while using less energy. Proper technique also ensures that physical forces are distributed safely across the body's structures, which significantly helps in reducing the risk of acute and overuse injuries. Developing good technique is a fundamental part of sports preparation that benefits athletes at all levels of competition.

209. (B) The overall, long-term plan to achieve a major goal (e.g., win a championship).
In team sports, a strategy refers to the overall, long-term plan developed to achieve a major objective, such as winning a championship or succeeding over an entire season. It provides a broad framework that guides how the team will play and prepare. A strategy takes into account the team's strengths, the rules of the competition, and the long-term goals of the program. Within this strategic plan, specific tactics are used during individual games to address particular situations and opponents.

210. (B) III, I, II
A standard single periodization plan follows a logical chronological sequence divided into three main periods. It begins with the preparatory period, where the athlete builds a physical and technical base for the season. This is followed by the competition period, focused on maintaining peak form and achieving performance results in major events. Finally, the year concludes with the transitional period, which is dedicated to physical and psychological rest and recovery before starting the next annual training cycle.

211. (C) Session Plan
A session plan has the shortest time frame in sports training planning, as it covers only a single training unit or day. It provides the most detailed information about the specific exercises, drills, durations, and intensities for that workout. Session plans are the fundamental building blocks of longer cycles like microcycles and macrocycles. By focusing on the immediate tasks, a session plan ensures that each day's training is purposeful and contributes toward the athlete's broader goals for development and competition.

212. (D) To develop the physical, technical, and psychological base for the upcoming season.
The primary objective of the preparatory period is to develop the essential physical, technical, and psychological foundation upon which the entire competitive season is built. During this phase, training typically features a high volume of work focused on building general qualities like strength and aerobic endurance. This extensive groundwork prepares the athlete's body and mind to handle the more intense and specific demands of the competition period. A strong preparatory base is crucial for achieving peak performance and preventing injuries later in the year.

213. (C) Complete inactivity for a prolonged duration.
The transitional period is designed for recovery, but it should not involve complete or prolonged inactivity. While the athlete needs rest from the high-intensity demands of their primary sport,

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competitions are an essential part of the buildup toward achieving peak form for major events.

171. (D) Talent development and monitoring
Assessing an athlete's "trainability," or how well they respond to a structured training program over time, is a critical part of the talent development and monitoring phase. This step goes beyond initial screening to evaluate an individual's capacity for long-term improvement and adaptation. By monitoring how an athlete develops and masters new skills, coaches can confirm their initial assessment of potential and make informed decisions about future selection and support. Continuous evaluation is essential for ensuring that talent is properly nurtured and realized.

172. (B) Athletes respond differently to the same training stimulus.
The principle of individuality in sports training recognizes that every athlete is unique and will respond differently to the same training stimulus. Factors such as genetics, age, gender, training history, and lifestyle all influence how a person adapts to physical stress. Coaches must consider these individual differences when designing training programs to ensure they are effective and safe for each athlete. While general principles apply to all, the specific loads and methods should be tailored to meet the individual's needs, capacity, and goals.

173. (C) Volume and Intensity
The magnitude of a training load is primarily defined by two components: volume and intensity. Volume represents the total quantity of work performed, such as total distance run or total weight lifted. Intensity refers to the quality or difficulty of the effort, such as the speed of a movement or the percentage of maximum heart rate achieved. These two factors work together to provide the necessary stimulus for physical improvement. Balancing volume and intensity is crucial for optimizing training effects and managing athlete fatigue.

174. (D) A well-structured tapering period before competition.
Overload is caused by an imbalance between the training stimulus and the body's ability to recover. Common causes include a rapid increase in training volume or intensity, insufficient rest, and excessive monotony in the training routine. These factors can lead to chronic fatigue and declining performance. A well-structured tapering period, however, is a planned reduction in training load before a competition to allow for recovery and peaking. Therefore, tapering is a strategy to prevent overload and optimize performance, not a cause of it.

175. (A) Explosive strength
Explosive strength is the ability of the neuromuscular system to overcome resistance with the highest possible speed of contraction. It is a critical component for power-based sports where athletes must perform rapid, forceful movements, such as sprinting, jumping, or throwing. Explosive strength relies on the rapid recruitment of motor units and the ability to generate a high rate of force development. Developing this quality involves training methods that focus on moving loads as quickly and powerfully as possible within the specified movement pattern.

176. (B) Cross-sectional area of the muscle
The primary physiological determinant of maximum strength is the cross-sectional area of the muscle fibers. A larger muscle generally has more contractile proteins, which allows it to generate a greater amount of force during a voluntary contraction. While other factors like fiber type, joint leverage, and neural coordination are important, muscle size provides the basic mechanical capacity for overcoming heavy resistance. Strength training programs often aim to increase muscle size through hypertrophy to enhance an athlete's overall force-generating potential for their sport.

177. (B) General endurance and strength endurance
Circuit training is a versatile method that involves moving through a series of exercises with minimal rest between them. This approach is particularly effective for developing both general cardiovascular endurance and specific strength endurance. By keeping the heart rate elevated and requiring repeated muscular efforts, circuit training improves the body's ability to resist fatigue and sustain physical work. It can be adapted to target different muscle groups

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and fitness levels, making it a valuable tool for athletes across a wide range of sports.

178. (B) i, ii, iii, and v
Endurance is the fundamental physical capacity to resist fatigue during prolonged activity. It is classified into aerobic endurance, which uses oxygen, and anaerobic endurance, which operates without it. A person's VO_2 max is a key physiological determinant of their aerobic capacity. Long-distance running is a classic example of an activity that requires high levels of endurance. While mental toughness is important for pushing through tiredness, endurance is primarily a physiological quality determined by the efficiency of the cardiovascular and muscular systems.

179. (C) Interval method
A training session consisting of repeated runs over a specific distance, such as 10 x 400 meters, with planned rest intervals between them, is an application of the interval method. This approach allows an athlete to perform a higher total volume of high-intensity work than they could in a single continuous effort. By controlling the intensity, duration, and recovery periods, coaches can target specific energy systems to improve both speed and endurance. It is a highly effective and structured way to build fitness.

180. (A) Both A and R are true and R is the correct explanation of A.
Speed is correctly identified as a highly specific motor ability, meaning that being fast in one type of movement does not guarantee being fast in another. For example, a sprinter with great locomotor speed may not have the fastest reaction time to a starting signal or the best ability to change direction quickly. Each of these components of speed relies on different neural pathways and muscular requirements. Therefore, speed training must be specific to the particular demands of the athlete's sport and their individual needs.

181. (C) Speed endurance
Speed endurance is the specific ability to maintain a near-maximum velocity for as long as possible despite the onset of muscular and neural fatigue. In the closing meters of a 100-meter sprint, an athlete's success often depends on their speed endurance, as the body naturally begins to decelerate after reaching top speed. Developing this quality involves training that challenges the anaerobic energy systems and the ability of the muscles to keep firing rapidly even when lactate levels are high and energy stores are low.

182. (B) Plyometric training
Plyometric training is a method specifically designed to improve explosive power and speed by utilizing the stretch-shortening cycle of the muscles. This cycle involves a rapid eccentric contraction followed immediately by a powerful concentric contraction. Exercises like jumps and bounds force the muscles and tendons to store and then quickly release elastic energy, which enhances the rate of force development. This type of training is highly effective for improving acceleration and overall power in sports that require rapid and forceful movements during performance.

183. (D) Static Flexibility: Flexibility during high-speed movement
Types of flexibility are defined by how the range of motion is achieved and the state of the athlete during the movement. Active flexibility involves own muscle action, while passive flexibility uses external help. Dynamic flexibility relates to range of motion during movement. Static flexibility, however, is the ability to maintain a large range of motion while in a stationary position, not during high-speed movement. Understanding these definitions is important for coaches to select the most appropriate stretching and mobility exercises for their athletes.

184. (A) The range of motion around a joint or series of joints.
The primary characteristic of flexibility is the range of motion available at a single joint or a series of joints. It is a fundamental component of physical fitness that influences an athlete's movement efficiency, technical proficiency, and risk of injury. Flexibility is determined by the structure of the joints and the elasticity of the surrounding muscles, tendons, and ligaments. Maintaining an adequate range of motion is essential for performing sport-specific skills correctly and for achieving overall physical mobility and health throughout an individual's life.

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185. (C) Coordinative ability (Agility/Adaptation)
A hockey player's ability to change direction rapidly while maintaining control of the ball is a classic demonstration of coordinative ability, often specifically referred to as agility or adaptation ability. This task requires the complex integration of balance, orientation, and reaction skills while performing a fine motor task. It involves processing unpredictable environmental cues and adjusting body movements accordingly. Developing these high-level coordinative capacities is essential for success in team sports where the game situation changes constantly and athletes must respond quickly and accurately.

186. (A) Ensure adequate nutrition and sleep
Ensuring adequate nutrition and sufficient sleep is a fundamental remedial measure for an athlete experiencing overload. These basic recovery factors are essential for repairing tissues, replenishing energy stores, and restoring hormonal balance after the stress of training. Proper hydration and a balanced diet provide the necessary building blocks for adaptation, while sleep is the primary time for physiological and psychological regeneration. Prioritizing these elements helps the body recover from excessive stress and prevents the development of more severe overtraining issues during preparation.

187. (D) Muscle contraction with a change in muscle length against a constant resistance.
Isotonic exercises are a type of strength training where a muscle changes its length while contracting against a constant external resistance. This involves two phases: concentric contraction, where the muscle shortens, and eccentric contraction, where the muscle lengthens under tension. Most traditional weightlifting exercises, such as bench presses or bicep curls, are isotonic. These exercises are highly effective for developing muscular strength and hypertrophy because they move a joint through a range of motion, closely mimicking many functional and sporting movements.

188. (B) Cardiorespiratory system to transport oxygen
Long-term or aerobic endurance is primarily limited by the capacity of the cardiorespiratory system to take up, transport, and deliver oxygen to the working muscles. This involves the efficiency of the lungs for oxygen exchange and the heart's ability to pump oxygenated blood throughout the body. While muscular factors are also involved, the overall limit for sustained aerobic activity is determined by how well the body can maintain a steady supply of oxygen to meet the energy demands of the muscles during prolonged exertion.

189. (C) Speed
Among the primary physical motor qualities, speed is widely considered to be the most constrained by genetic factors. An individual's maximum velocity is heavily influenced by the proportion of fast-twitch to slow-twitch muscle fibers, as well as the inherent efficiency of their nervous system. While training can improve technique, strength, and neural coordination, the genetic upper limit for speed is more fixed than it is for qualities like endurance or flexibility. This makes natural explosive potential a key factor in identifying talent for sprinting events.

190. (D) Static-Active flexibility
Holding a yoga pose without any external support is an example of static-active flexibility. This type of flexibility involves achieving and maintaining a large range of motion using only the contraction of the agonist muscles to hold the position. It requires both the elasticity of the tissues being stretched and the strength of the muscles performing the action to stabilize the joints. Static-active flexibility is more challenging than passive flexibility because the athlete must provide their own force to maintain the range of motion.

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191. (A) Balance ability
Performing on a balance beam is a high-level demonstration of balance ability, which is the coordinative capacity to maintain or regain equilibrium in a challenging position. Gymnasts must continuously adjust their muscles to keep their center of gravity over a very narrow base of support while performing complex movements. This ability relies on the accurate integration of sensory information from the eyes, inner ear, and proprioceptors. Developing exceptional balance is essential for safety and success in gymnastics and many other technically demanding sports disciplines.

experiences early in life, we can build a strong foundation for future technical skill acquisition. As the nervous system matures and becomes less adaptable, developing these fundamental coordinative capacities becomes significantly more challenging.

221. (C) The ability to maintain near-maximum speed for an extended duration.
Speed endurance is the specific motor ability to maintain a near-maximum velocity for as long as possible in the face of developing fatigue. This quality is vital in sports that require prolonged bursts of sprinting, such as the final stage of a 100-meter race or multiple sprints in a football match. It relies on both high levels of speed and the anaerobic capacity to resist the metabolic changes that naturally cause the body to slow down after reaching its top velocity.

222. (D) Static-Passive
Achieving a hamstring stretch by grabbing the foot and pulling the leg toward the chest is an example of static-passive flexibility. In this case, the external force from the person's arms is used to reach and maintain the stretched position, and there is no active movement or contraction of the muscles being stretched. The position is held still for a period of time to increase the range of motion around the hip joint. This is a common and effective method for improving overall flexibility.

223. (A) Kinesthetic differentiation ability
Kinesthetic differentiation ability is a coordinative capacity that allows an individual to perceive the exact position and movements of their body parts in space without relying on visual cues. It depends on sensory feedback from the muscles, joints, and tendons, often called proprioception. This ability is essential for performing complex and precise movements with high accuracy and efficiency. By refining this capacity, athletes can achieve better control over their actions, which is vital for technical mastery in many sports like gymnastics, diving, or ball control.

224. (B) Technique is movement, skill is its application, and tactics are the game plan.
Technique, skill, and tactics are interconnected components of sports performance. Technique is the fundamental and idealized way of performing a movement. Skill represents an athlete's ability to apply that technique effectively and consistently in competitive situations. Tactics are the specific game plans and actions used to outwit opponents and achieve an advantage on the field. Together, they form a hierarchy where technique provides the foundation, skill is the practical realization, and tactics are the strategic use of those abilities during a competition.

225. (B) Microcycle
A microcycle is a training plan that covers a short period, typically lasting one week. It details the individual training sessions, recovery periods, and specific goals for each day. Microcycles are the most basic unit of organized training planning and are grouped together to form longer mesocycles. By focusing on a single week, coaches can manage the training load precisely and make adjustments based on the athlete's progress or state of recovery, ensuring that the preparation remains effective and on track.

226. (A) During the General Preparatory Period
In a standard periodized training plan, the training volume is typically at its highest during the general preparatory period. This phase is dedicated to building a broad physical and technical foundation, which requires a large quantity of work, such as long-duration aerobic activity and many repetitions of basic exercises. As the year progresses toward the competition season, the focus shifts from quantity to quality, leading to a decrease in total volume while the intensity of the specialized training increases for performance.

227. (C) Multiple periodization
A training plan for an athlete who needs to be in peak condition for several separate major events throughout the year, such as a boxer with three title fights, would use multiple periodization. This model divides the year into three or more complete training cycles, each including its own preparatory, competition, and transitional phases. This structure allows the athlete to peak for each specific event while still managing fatigue and ensuring adequate preparation and recovery between each high-intensity competitive block of the annual season.

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199. (D) Economy of movement
Economy of movement is a major determinant of endurance performance, as it reflects how efficiently an athlete uses energy to maintain a given pace or workload. An athlete with good economy can perform at the same intensity while consuming less oxygen than someone with poor mechanics. Factors such as technique, body weight, and muscle fiber composition all influence movement economy. Improving efficiency through technical refinement and specific training allows an athlete to sustain physical activity for longer periods or at higher speeds before fatiguing.

200. (A) P-3, Q-4, R-2, S-1
Technique development follows a logical progression from initial exposure to mastery. The gross coordination stage is marked by a basic understanding but many errors. In the fine coordination stage, the movement is understood but still requires conscious effort to perform correctly. The stabilization and automation stage is characterized by high consistency and the ability to adapt the skill to game situations. Understanding these stages helps coaches provide appropriate feedback and design effective practices that match the athlete's current level of skill acquisition.

201. (C) Muscle fiber composition
An athlete's maximum speed is primarily determined by their muscle fiber composition, specifically the proportion of fast-twitch fibers. These fibers are designed for rapid, powerful contractions, which are essential for achieving high velocities. While training can improve factors like technique, strength, and neural coordination, the genetic makeup of an individual's muscle tissue sets the fundamental limit for their speed potential. This is why natural sprinters often possess a higher percentage of fast-twitch fibers compared to endurance athletes, who have more slow-twitch fibers.

202. (A) Acceleration Speed
Training that focuses on improving a sprinter's ability to reach their maximum velocity in the shortest possible time targets acceleration speed. This phase of a race is characterized by rapid increases in speed from a stationary start. Developing acceleration involves explosive power training and drills that emphasize generating high levels of force against the ground. Improving this ability is critical for sprinters and for athletes in sports where quick bursts of movement are needed to gain an advantage over opponents or to react to game situations.

203. (B) i, ii, and iii
Flexibility is the range of motion at a joint and is influenced by several factors. It is joint-specific, meaning an individual can be flexible in their hips but not in their shoulders. Age and activity levels also play a role, as flexibility tends to decrease with age without regular stretching. Generally, females are more flexible than males due to anatomical and hormonal differences. Muscle temperature also significantly impacts flexibility, as warm muscles are more pliable. Flexibility is a distinct component, not the same as strength.

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204. (B) PNF Stretching
PNF stretching is a specialized method for increasing flexibility that often involves working with a partner. This technique combines isometric muscle contractions with passive stretching to take advantage of neural reflexes that relax the muscle being stretched. By alternating between contracting and stretching the muscle, PNF can achieve significant and immediate improvements in the range of motion at a joint. It is an advanced training method commonly used by athletes to enhance their mobility and technical performance while potentially reducing the risk of injury.

205. (C) Coordinative abilities
Coordinative abilities are the capacities that allow an athlete to perform difficult and complex motor actions with precision, economy, and purpose. These abilities, governed by the central nervous system, are essential for learning new skills and adjusting movements in response to a dynamic sporting environment. They enable the brain and muscles to work together efficiently to execute complicated tasks quickly and accurately. Developing strong coordinative abilities is fundamental for achieving high levels of technical mastery and overall athletic proficiency across all sports disciplines.

192. (B) Gross coordination stage
The gross coordination stage is the initial phase of technique development where the learner has a rudimentary understanding of the movement but performs it with many errors. During this stage, the coordination is poor, and the actions are often stiff, inconsistent, and energy-inefficient. The athlete's focus is on learning the basic structure of the skill. Through repeated practice and receiving clear feedback, the learner will eventually move into the fine coordination stage, where their movements will become more fluid, accurate, and consistent over time.

193. (A) i, ii, and iii
Periodization is the systematic division of an annual training plan into manageable phases to optimize performance. It typically involves three main periods: preparatory, competition, and transitional. The primary goal is to manage training loads to ensure the athlete peaks for major events. Unlike a constant training approach, periodization purposefully varies the intensity and volume across different phases to challenge the body while allowing for recovery. This structured approach is essential for long-term athletic development and achieving peak performance during the competitive season.

194. (A) Adaptation
Adaptation is the fundamental biological process through which the body grows stronger and more efficient in response to the stress of physical training. When exposed to a stimulus that exceeds its current capacity, the body responds by making physiological and structural changes, such as increasing muscle size or improving cardiovascular efficiency. This process allows the individual to handle greater demands in the future. Adaptation is the core mechanism of all physical improvement and is why structured training leads to enhanced athletic performance over time.

195. (C) Uniformity
Training load is characterized by several key features that determine the impact of a workout on an athlete's body. These include volume, which is the quantity of work; intensity, which is the difficulty of the effort; and density, which is the relationship between work and rest periods. Uniformity is not a primary feature of training load because effective training often requires planned variation rather than a constant, uniform stimulus. Systematically varying these factors is essential for stimulating progress and managing an athlete's fatigue effectively.

196. (D) Training must be specific to the goals of the athlete and the demands of the sport.
The principle of specificity states that the adaptations the body makes in response to training are highly specific to the nature of the training stimulus. To improve performance in a particular sport or movement, the training must target the specific muscles, energy systems, and technical skills required for that activity. This ensures that the gains made during preparation transfer effectively to competition. Following this principle helps athletes and coaches design efficient and relevant programs that directly contribute to achieving their specific sporting objectives.

197. (C) Irritability and mood swings
Overload can manifest through both physical and psychological symptoms as the athlete struggles to cope with excessive stress. A common psychological indicator is an increase in irritability and frequent mood swings. These signs suggest that the athlete's mental and emotional state is being negatively affected by overtraining. Other psychological symptoms include a loss of motivation and difficulty concentrating. Monitoring an athlete's mood and mental well-being is essential for identifying early signs of overload and making necessary adjustments to their training and recovery plan.

198. (B) Explosive strength and power
Plyometric exercises are highly effective for developing an athlete's explosive strength and power. These movements involve a rapid stretching of a muscle followed immediately by a powerful contraction, utilizing the stretch-shortening cycle. This type of training improves the nervous system's ability to recruit motor units quickly and increases the elasticity of the tendons. By practicing explosive jumps, bounds, and throws, athletes can enhance their capacity for rapid force development, which is critical for success in many speed- and power-based sporting events.

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staying active through low-intensity recreational activities is important for maintaining some level of general fitness and health. This concept is known as active rest. Complete inactivity for a long period can lead to a significant loss of training adaptations, making it harder and more injury-prone to begin the next training cycle in the future.

214. (B) Predict future success in a sport based on current attributes and potential.
The primary aim of talent identification is to predict an individual's potential for future success in a specific sport based on their current physical, physiological, and psychological attributes. This systematic process helps sports organizations recognize promising young athletes who are most likely to benefit from specialized training and high-performance programs. By identifying talent early and providing the right support, the procedure helps maximize the chances of developing elite athletes who can represent their teams or nations at the highest competitive levels.

215. (D) Continuity
The principle of continuity states that for sports training to be effective, it must be a regular and continuous process over a long period. Regular stimulation is necessary for the body to adapt and maintain the physiological improvements gained through training. If there are frequent or long interruptions in the training schedule, the athlete will experience a reversal of their fitness gains, a process called detraining. Maintaining a consistent training schedule ensures steady progress and the long-term development of an athlete's potential.

216. (A) Statement I is true, but Statement II is false.
Training load is correctly defined as the total workload or stress placed on an athlete during a session. However, adaptation does not occur when the load is insufficient; rather, it is the body's positive response to a training load that is challenging enough to stimulate change. If the load is too low, no physiological adjustment will happen, and the athlete's fitness level will remain the same or even decline. Effective training requires a load that purposefully challenges the body to trigger adaptation processes.

217. (C) Chronic overload or overtraining syndrome
Signs such as persistent fatigue, a significant and lasting decline in performance, and disturbances in hormonal and sleep patterns are classic indicators of chronic overload or overtraining syndrome. This condition occurs when the total stress from training and other sources exceeds the athlete's ability to recover and adapt over a long period. It is more severe than simple fatigue and requires a significant period of rest and professional management to resolve. Recognizing these warning signs early is essential for maintaining an athlete's health and career.

218. (D) All i, ii, iii, and iv are correct.
Strength is defined as the physical motor ability to overcome or resist an external resistance. It is categorized into various types, including maximum strength, explosive strength, and strength endurance, each serving different roles in performance. Key factors that determine an individual's strength include the cross-sectional area of their muscles and the efficiency of their neural coordination. Established training methods like isotonic and isometric exercises are used to develop these various types of strength effectively within a structured and purposeful sports training program.

219. (D) Anaerobic endurance
Anaerobic endurance is the capacity to sustain high-intensity physical activity where energy is supplied through metabolic pathways that do not require oxygen. This type of endurance is essential for short-duration events lasting between 30 seconds and two minutes, such as a 400-meter sprint or a 100-meter swim. During these activities, the body produces energy rapidly, leading to the buildup of byproducts like lactate. Developing anaerobic endurance allows an athlete to maintain high speeds and power despite the onset of intense muscular fatigue.

220. (A) Both A and R are true and R is the correct explanation of A.
The development of coordinative abilities is most effective during childhood and adolescence because the central nervous system is highly plastic during these years. This high level of plasticity makes the young brain more receptive to learning and refining complex motor patterns. By exposing children to a wide variety of movement

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competitive situations to achieve a specific goal. While technique focuses on the mechanics of the movement, skill encompasses the execution of the movement under pressure, with proper timing and in response to the dynamic environment of a sport. A skilled athlete successfully bridges the gap between practice and performance.

164. (D) The stage of gross coordination (initial learning)
An athlete who is in the early stages of learning a new skill and performs it with many inconsistent and inefficient movements is in the gross coordination stage. This is the initial phase of technique development, where the learner is trying to understand the basic mechanics of the task. Movements are often stiff, uncoordinated, and full of errors. Through practice and feedback, the athlete will gradually refine their movements and progress toward the fine coordination and automation stages of technical mastery.

165. (C) A tactic
A pre-arranged play designed to exploit a specific defensive weakness is a clear example of a tactic. In sports, tactics are the practical, short-term plans and actions used during a game to achieve an advantage over an opponent. They are more specific than an overall strategy and are often tailored to the particular strengths or vulnerabilities of a team or player. Effective tactical execution requires coordination among team members and the ability to adapt to the game's changing circumstances.

166. (B) Session plan
A coach who outlines the objectives, content, and duration for a single day's training is creating a session plan. This is the most detailed and short-term level of training planning. A session plan ensures that the daily workout is purposeful and aligned with the athlete's broader training goals. It specifies the individual exercises, drills, and rest periods for that specific training unit. Well-organized session plans are the essential building blocks for successful microcycles, mesocycles, and overall long-term athlete development.

167. (D) To systematically manage training for timely peaks in performance.
The main objective of periodization is to systematically organize and manage the training process so that an athlete reaches their peak performance for the most important competitions of the year. This is achieved by dividing the annual plan into phases with varying training focuses, volumes, and intensities. Periodization also helps in preventing overtraining by including planned recovery and regeneration. By carefully timing different training stimuli, coaches can ensure that physical and technical capacities are developed logically and lead to optimal performance when it matters most.

168. (B) i, ii, and iii
Periodization models are classified based on the number of major competitive peaks an athlete aims for during a year. Single periodization involves one peak, double periodization involves two peaks, and multiple periodization targets three or more peaks throughout the season. These structures help coaches plan the timing of preparatory, competition, and transitional phases. While there are many advanced variations in periodization theory, these three are the primary recognized types based on the frequency of major events.

169. (C) To provide active rest, allowing for physical and psychological recovery.
The transitional period occurs after the competition season and is dedicated to physical and psychological rest. Its primary purpose is to allow the athlete to recover from the intense stresses of high-level training and competition. This period typically involves active rest, where the athlete participates in low-intensity, recreational activities that are different from their primary sport. Proper recovery during this phase is essential for preventing burnout, maintaining motivation, and ensuring the athlete is ready to start the next training cycle with renewed energy.

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170. (A) A preparatory competition
A preparatory competition is a match or event used by athletes as a training tool to gauge their progress and practice competitive skills before the main goal of the season. These competitions are not the primary focus, so performance results are less important than the lessons learned and the experience gained. They allow coaches and athletes to identify areas for improvement and test tactical plans in a real-world setting. Preparatory

228. (B) i, ii, iii, and iv
Talent identification is a comprehensive process that involves assessing multiple factors to predict an individual's potential for athletic success. This includes measuring physical and physiological traits, evaluating technical skill and how well an athlete learns, and considering psychological qualities like motivation and resilience. Even an athlete's genetic background can provide insights into their predispositions. Immediate financial rewards are not a part of this scientific process, which focuses on long-term development and the identification of genuine potential for high-level performance in a specific sport.

229. (C) Reversibility
The principle of reversibility states that the positive physiological adaptations gained through regular training will be lost if training is stopped or significantly reduced for a prolonged period. This process is often called detraining. The body only maintains the fitness levels it needs to handle current demands; when those demands are removed, muscle size, cardiovascular efficiency, and other qualities will naturally decline. This principle highlights the importance of maintaining a continuous and regular training schedule to sustain performance gains and long-term athletic development over time.

230. (B) Ensure adequate nutrition and sleep
Prioritizing adequate nutrition and sufficient sleep is an essential remedial measure for any athlete suffering from overload. These basic elements are critical for the body's natural recovery processes, allowing for the repair of damaged tissues, the replenishment of energy stores, and the restoration of hormonal balance. Proper recovery through rest and diet helps reverse the negative effects of excessive training stress and prevents the development of more severe conditions like overtraining syndrome. Ensuring the athlete is well-rested is fundamental for long-term health and performance.

231. (D) Muscle contraction with a change in muscle length against a constant resistance.
Isotonic exercises are a fundamental type of strength training where a muscle changes its length during contraction while working against a constant external load. This type of training includes both concentric phases, where the muscle shortens, and eccentric phases, where it lengthens under tension. Most common weightlifting movements, like bicep curls or squats, are isotonic. These exercises are highly effective for building muscular strength, endurance, and size because they move joints through their range of motion, providing a functional and sport-relevant stimulus for adaptation.

232. (A) Cardiorespiratory system to transport oxygen
Long-term or aerobic endurance is primarily limited by the capacity of the cardiorespiratory system to efficiently take up, transport, and deliver oxygen to the working muscles during prolonged activity. This involves the effectiveness of the lungs for gas exchange and the strength of the heart to pump oxygenated blood. While other factors like muscle metabolism are important, the upper limit for sustaining aerobic work is determined by how well these systems can maintain an adequate oxygen supply to meet the muscles' energy requirements.

233. (C) Speed
Speed is widely recognized as the physical motor quality that is most heavily influenced by genetic factors. An individual's potential for maximum velocity is constrained by their inherent muscle fiber type composition and the efficiency of their nervous system. While targeted training can improve factors like technique, strength, and neural coordination, the overall range for improvement in speed is smaller than it is for qualities like endurance or flexibility. This makes natural explosive potential a primary factor in identifying talent for high-speed sporting events.

234. (A) Static-Active flexibility
Holding a yoga pose without any external support is a clear example of static-active flexibility. This type of flexibility requires the individual to reach and maintain a large range of motion using only the contraction of their own agonist muscles. It is a challenging form of flexibility because it demands both the elasticity of the tissues being stretched and the muscular strength and stability to hold the body in position. Static-active flexibility is highly functional and is an important component of overall physical motor control.

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235. (D) Balance ability
Performing on a balance beam is a high-level demonstration of balance ability, which is the coordinative capacity to maintain the body's equilibrium in challenging positions. A gymnast must continuously adjust their muscles to keep their center of gravity over a narrow and elevated base of support while executing complex movements. This ability relies on the precise integration of sensory information from the vestibular, visual, and proprioceptive systems. Developing exceptional balance is a fundamental requirement for success and safety in gymnastics and many other technically demanding sports.

236. (B) Gross coordination stage
The gross coordination stage represents the initial phase of learning a new motor skill, where the athlete understands the basic structure of the movement but performs it inefficiently. In this stage, coordination is often poor, movements are inconsistent, and many technical errors are present. The learner's actions are typically stiff and require a great deal of conscious thought. Through continued practice and feedback, the athlete will gradually refine their coordination and move toward the fine coordination stage, where their performance becomes smoother and more accurate.

237. (C) Provides structure, direction, and a basis for evaluation.
Planning is a crucial component of sports training because it provides a structured framework and clear direction for an athlete's preparation. A well-designed plan outlines the goals, methods, and training loads needed to achieve performance success. It also establishes a baseline for the objective evaluation of progress, allowing coaches to make informed adjustments over time. By transforming a series of workouts into a purposeful and organized long-term strategy, planning helps maximize the efficiency of training and increases the likelihood of reaching one's full athletic potential.

238. (D) Macrocycle
A macrocycle is a long-term training plan that typically covers an entire season or a full year. It provides a broad overview of the athlete's preparation and is divided into major periods such as preparatory, competition, and transitional. The macrocycle serves as the overall framework within which shorter mesocycles and microcycles are organized. By planning for the whole year, coaches can ensure that different fitness components are developed in a logical sequence and that the athlete peaks at the right time for major events.

239. (A) Competition Period
The taper is a planned reduction in training load during the final weeks or days before a major event and is an essential part of the competition period. Its primary goal is to minimize fatigue while maintaining the fitness gains achieved during earlier training phases. This reduction in volume allows the athlete's body to fully recover and reach its peak performance level for the competition. Proper tapering ensures that the athlete enters the event feeling fresh, powerful, and ready to perform at their highest possible capacity.

240. (A) P-2, Q-4, R-3, S-1
Key concepts in sports training are illustrated by specific examples in practice. A tactic is a short-term game plan, like running a full-court press in basketball. Strength is the ability to generate force, exemplified by a heavy bench press. Endurance is the capacity to sustain effort over time, such as completing a triathlon. Periodization is the systematic organization of the training year into different phases of work and rest. Understanding these relationships is fundamental for anyone involved in the structured preparation and performance of competitive athletes.

241. (B) Long-term monitoring and confirmation of potential within a program.
The final and most important step in the talent identification process is long-term monitoring and the confirmation of an athlete's potential within a structured developmental program. Initial screenings provide only a snapshot of an individual's abilities; genuine talent is revealed through how an athlete responds to high-level training and competition over time. This continuous evaluation allows coaches to observe progress, mastery of skills, and psychological resilience. Only after a sustained period of successful development can an athlete's potential for elite-level performance be fully confirmed.

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242. (A) Training stimulus and Recovery
The process of supercompensation is the biological foundation of physical improvement, and it relies on a delicate balance between the training stimulus and adequate recovery. When an athlete trains, they experience temporary fatigue and a decline in capacity. It is during the subsequent recovery period that the body rebuilds itself to a higher level of fitness than before. If the recovery is insufficient, the body cannot compensate for the stress, leading to stagnation or overtraining. Successful training programs must carefully manage both work and rest.

243. (C) The time relationship between the work and rest intervals.
Density is a key parameter of training load that describes the time relationship between the work phases and the rest or recovery periods within a training session. High density means shorter rest periods relative to the amount of work done, which increases the overall physiological demand on the athlete. Manipulating density allows coaches to target specific metabolic systems and adapt the training to the specific requirements of the sport. It is a critical factor in managing the intensity and effectiveness of a single training unit.

244. (D) The ability to generate force
The primary characteristic of strength is the motor ability of a muscle or muscle group to generate force against an external resistance. It is a fundamental quality of physical fitness that allows individuals to perform essential movements like pushing, pulling, and lifting. Strength is determined by physiological factors such as muscle size and fiber type, as well as the neural efficiency of motor unit recruitment. Developing strength is a central goal in many sports training programs to improve performance, enhance movement efficiency, and reduce the risk of injury.

245. (C) Is characterized by the body's ability to maintain a state of oxygen balance.
Long-term or aerobic endurance is characterized by the body's ability to maintain a state of oxygen balance during prolonged physical activity. This means that the cardiorespiratory system is able to supply enough oxygen to the working muscles to meet their energy demands, allowing the athlete to sustain the activity without the rapid buildup of fatigue-inducing byproducts. This capacity is essential for endurance sports like marathon running or distance swimming, where the body must rely on aerobic energy production over an extended period of time.

246. (B) Absolute Speed
Speed in sports training is typically classified into specific types based on the nature of the movement and the response. These include reaction speed, which is the response to a stimulus; acceleration speed, which is reaching top velocity; and movement speed, which is the execution of a single action. While "absolute speed" might be used colloquially to describe maximum velocity, it is not a standard, formally defined term within the traditional framework of motor abilities in sports science. Speed is categorized by these functional components.

247. (D) Warm-up and cool-down
To effectively and safely improve flexibility, stretching exercises should be integrated into both the warm-up and cool-down phases of a training session. During the warm-up, dynamic stretching helps prepare the joints and muscles for the upcoming physical activity by increasing range of motion and blood flow. After the main workout, during the cool-down, static stretching is used to help the muscles relax and to promote long-term improvements in flexibility. Regular attention to stretching at these times is essential for maintaining mobility and overall athletic performance.

248. (A) Central nervous system
The development of coordinative abilities is fundamentally and primarily linked to the functioning and maturation of the central nervous system. These abilities, which include balance, rhythm, and reaction, depend on the brain's capacity to process sensory information and send precise motor signals to the muscles. As the nervous system becomes more efficient at regulating and controlling these processes, an athlete's overall coordination and technical skill performance improve. This is why coordinative training is most effective during the developmental years when the nervous system is highly adaptable.

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249. (C) The learned ability to bring about a predetermined result with maximum certainty.
A skill in sport is best described as the learned ability to consistently achieve a predetermined performance result with maximum certainty and efficiency. It involves the successful integration of physical, technical, and mental processes to perform a task under various conditions. A skilled athlete can execute complex movements with precision and with minimal wasted energy, even when under pressure. Skill is not innate but is developed through years of deliberate practice, experience, and the continuous refinement of technique and decision-making within the context of a sport.

250. (A) Transitional Period
The transitional period is the phase of an annual training cycle dedicated to physical and psychological recovery following the end of the competition season. Its primary purpose is to allow the athlete's body and mind to regenerate from the intense stresses of high-level preparation and performance. This period typically involves active rest, where the athlete engages in low-intensity recreational activities instead of their regular sport. Proper rest during this phase is essential for preventing burnout and preparing for the next training year's preparatory phase.

251. (B) The principle of continuity
Continuous training ensures that the physiological adaptations gained through regular exercise are maintained over time. Without consistent stimulus, the body undergoes de-training, leading to a noticeable decline in athletic performance levels. Therefore, maintaining an uninterrupted schedule is essential for sustaining physical progress and preventing the reversal of improvements achieved during previous training sessions.

252. (A) The physiological enhancement of functional capacity in response to training stress.
The human body responds to the physical stress of exercise by improving the functional efficiency of its various physiological systems. This transformation allows an individual to manage future physical demands more effectively. Such a mechanism serves as the primary driver for athletic progress, as the body gradually adjusts its internal capabilities to meet increased external workloads.

253. (C) The combination of physiological and psychological demands imposed by training.
Training load encompasses the total burden experienced by an athlete during physical activity, involving both mental and physical exertion. It reflects the comprehensive impact of a workout session on the body and mind. By quantifying these combined stresses, coaches can better understand the overall stimulus provided and manage the athlete's development and recovery processes effectively.

254. (D) Density
Density refers to the specific relationship between the duration of active work and the recovery periods within a training session. By altering the amount of rest time between exercises or sets, the overall intensity and character of the workout are changed. Adjusting this variable is a common method for coaches to control the total physiological stress applied.

255. (C) To stimulate continuous physiological adaptation and performance improvement.
Progressive overload involves the systematic and gradual increase of training stimuli to ensure the body continues to face new challenges. This constant pressure triggers ongoing physiological adaptations, preventing performance plateaus. By consistently raising the demands placed on an athlete, this principle ensures that the body improves its functional capacity and achieves higher levels of athletic excellence.

256. (B) Progressive overload allows for adaptation, while overload exceeds recovery capacity.
Progressive overload provides a controlled stimulus that encourages positive physical development through adaptation. In contrast, detrimental overload occurs when the training demands are so excessive that the body cannot adequately recover. This imbalance leads to a maladaptive state where the athlete's performance stagnates or declines, rather than improving as intended through the normal training process.

257. (D) A very slow increase in training intensity
Overload results from excessive physical or mental demands that outpace an individual's

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ability to recover. Factors such as inadequate rest, poor dietary support, and rapid spikes in workload are primary contributors to this condition. However, a cautious and gradual increase in exercise intensity allows for proper adaptation and is generally considered a safe method to avoid overtraining.

258. (A) The state of overload.
The combination of physical decline, compromised immune function, and psychological instability often indicates a state of overtraining. When an athlete faces training loads that exceed their recovery capacity, the body exhibits systemic fatigue. These symptoms serve as critical warning signs that the current training volume and intensity are unsustainable and are negatively impacting the individual's overall health.

259. (C) A significant reduction in training load, possibly including complete rest.
Addressing the state of overtraining requires an immediate decrease in the physical demands placed on the athlete to allow the body to recover. This process often necessitates a period of complete rest from athletic activity. By prioritizing recovery over further training, the physiological and psychological systems can begin to repair themselves and return to a functional state.

260. (A) Results from an imbalance between training stress and recovery.
Overload is fundamentally a maladaptive state caused by a mismatch between the total training stimulus and the athlete's capacity for recuperation. While various factors like nutrition and stress play a role, the core issue is that the body is being taxed faster than it can repair itself. Successful training requires balancing these two elements to foster positive development.

261. (D) Strength endurance
Strength endurance describes the capacity of a muscle group to perform repeated contractions against resistance over an extended timeframe. This ability allows an athlete to maintain a specific level of force despite the onset of physical tiredness. It is crucial for sports requiring prolonged physical effort, as it directly relates to how well an individual can resist muscular fatigue.

262. (B) The muscle's cross-sectional area.
The maximum force a muscle can generate is heavily influenced by its physical size, specifically its cross-sectional area. Larger muscles generally contain more contractile tissue, providing a greater potential for total force production. This physiological characteristic sets a foundational limit on an individual's peak strength, making muscle hypertrophy a primary goal for athletes seeking to increase their maximal power.

263. (C) Explosive strength incorporates the element of speed, while maximum strength does not.
Maximum strength focuses solely on the total amount of force produced in a single effort, regardless of how long it takes to achieve it. Conversely, explosive strength requires the rapid application of force, blending strength with velocity. This distinction is vital in sports where the speed of movement is just as important as the absolute power generated by the muscles.

264. (D) Recruitment and firing patterns of motor units within a single muscle.
Intra-muscular coordination involves the internal management of motor units within a specific muscle to produce force effectively. This includes the number of units activated and the frequency at which they receive signals from the nervous system. Improving this type of coordination allows for more efficient and powerful muscle contractions without necessarily increasing the actual size of the muscle tissue.

265. (A) It is a prerequisite for the effective expression of other abilities like speed.
Strength serves as a basic motor ability because it provides the necessary force required to perform nearly all other physical tasks. For instance, achieving high speeds or generating explosive power depends on the underlying capacity of the muscles to exert significant force. Therefore, developing a strong physical base is essential for the successful execution and enhancement of more complex athletic skills.

266. (B) The ability to sustain activity where oxygen demand is met by oxygen supply.
Aerobic endurance refers to the body's ability to maintain physical activity over a long period using energy produced in the presence of sufficient oxygen. During such low to moderate-intensity

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central nervous system is better prepared to process information and coordinate unfamiliar actions. This prior knowledge serves as a bridge, making the learning of complex athletic techniques more efficient and improving overall coordinative development.

285. (C) Dynamic balance
Dynamic balance is specifically the ability to keep the body's equilibrium while it is performing movements or traveling through space. This is a crucial component for athletes in many sports who must remain stable while running, jumping, or changing direction. It differs from static balance, which involves maintaining stability in a stationary position, by requiring constant adjustments during active tasks.

286. (D) Technique is the idealized movement, while skill is its successful application in competition.
Technique represents the theoretical and biomechanically ideal way to perform a specific movement. In contrast, skill is the practical ability to use that technique effectively when facing the pressures and unpredictable nature of a real competitive environment. While an athlete can practice technique in a controlled setting, possessing the skill means they can achieve successful outcomes during actual matches.

287. (C) The autonomous stage.
In the autonomous stage of technique development, the execution of a movement becomes automatic and requires very little conscious attention. This allows the athlete to dedicate their mental resources to other critical areas, such as tactical decision-making or monitoring the environment. Reaching this final phase is the result of extensive practice and refinement, leading to highly efficient and consistent athletic performance.

288. (B) A tactic.
Tactics involve the short-term, specific decisions and actions taken during a game to gain an advantage over an opponent. Deciding to implement a high-press defense for a limited period is a focused maneuver designed to achieve a particular objective within the match. These choices are flexible and can be adjusted based on the immediate progress and circumstances of the competition.

289. (D) The overarching, long-term plan for a competition or season.
Strategy represents the comprehensive and long-term planning required for an entire competitive season or a major tournament. It provides the general framework and philosophy from which specific game-day tactics are developed. By establishing a clear overall approach, strategy helps athletes and teams stay focused on their primary objectives and guides their long-term preparation and development over an extended period.

290. (A) Because it forms the basis for efficient and effective skill execution.
Developing sound technique is fundamental because it provides the most biomechanically efficient and effective way to perform athletic movements. This efficiency is the necessary foundation upon which successful skill application is built during competition. Without a solid technical base, an athlete is less likely to execute skills reliably under pressure, which can limit their overall performance potential and growth.

291. (C) To ensure the athlete is in peak condition for the main competitions.
Periodization is used to systematically organize training into distinct phases to manage the athlete's recovery and development. Its primary goal is to ensure that the individual reaches their maximum performance level, or peak condition, precisely when the most significant competitions take place. By varying the workload throughout the year, periodization also helps in preventing fatigue and avoiding the risks of overtraining.

292. (A) Mesocycle planning.
A mesocycle is a medium-term training plan that typically spans several weeks to a few months. It is designed to target a specific physiological or technical goal, such as improving anaerobic endurance or building strength. By focusing on a particular objective for a set period, this type of planning ensures that the athlete receives a consistent and effective stimulus for progress.

293. (D) Ensuring training is specific to the sport's demands.
Specificity is a core principle of training planning that requires exercise programs to be directly

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and coordinated during a task. High levels of neuromuscular control are essential for achieving maximum speed, as they allow for more rapid and synchronized contractions that propel the body forward.

276. (A) A person's flexibility level can differ significantly from one joint to another.
Flexibility is highly specific to each individual joint and the surrounding connective tissues. Having an excellent range of motion in one area, such as the shoulders, does not guarantee similar flexibility in another area, such as the hips or ankles. This characteristic means that flexibility must be assessed and trained individually for different parts of the body to improve performance.

277. (D) Active flexibility
Active flexibility is demonstrated when an athlete uses their own muscular strength to achieve and maintain a specific range of motion. In the case of a gymnast holding a difficult position, the internal force generated by the muscles is the primary driver for sustaining that posture. This distinguishes it from passive flexibility, which relies solely on outside forces like gravity or partners.

278. (B) Because it utilizes an external force to extend the range of motion.
Passive flexibility generally allows for a larger range of motion because it uses external assistance, such as gravity or a partner, to push a joint beyond its active limits. In contrast, active flexibility is restricted by the strength of the muscles performing the movement. By applying additional force, the surrounding tissues can be stretched further than muscle contraction alone allows.

279. (C) The anatomical structure of the joint.
The physical construction and shape of the bones and joints in the body establish the absolute boundaries for movement. While muscles and tendons can be trained to become more elastic, the anatomical configuration of the joint provides a fixed limit that cannot be exceeded. Understanding these structural constraints is essential for setting realistic goals for flexibility and improving athletic skill execution.

280. (D) It makes the muscles and connective tissues more extensible.
Increasing body and muscle temperature through a proper warm-up enhances the elasticity of the various connective tissues and muscles surrounding a joint. Warm tissues can be stretched more easily and safely, allowing for a greater range of motion during physical activity. This physiological change reduces the internal resistance within the muscles, making them more pliable and better prepared for stretching.

281. (A) Orientation ability
Orientation ability allows an athlete to understand and change their body's position in relation to their surroundings. In a dynamic game like basketball, this involves tracking opponents, the ball, and the court while moving through the air. This skill is vital for making precise adjustments during complex movements, ensuring the athlete remains effective and balanced even in highly unpredictable competitive situations.

282. (B) They are highly dependent on the central nervous system's control of movement.
All coordinative abilities share a primary reliance on the central nervous system for processing sensory data and directing physical actions. These abilities represent the brain's capacity to organize and regulate complex movements with efficiency and accuracy. Because they are rooted in neural processing, they are essential for learning new skills and adapting to the rapidly changing environments in competitive sports.

283. (B) Differentiation ability
Differentiation ability is the capacity to achieve high levels of precision through the fine-tuning of motor actions. A table tennis player demonstrates this by applying the exact amount of force and spin required to control the ball's trajectory. This ability ensures that movements are not only accurate but also performed with maximum economy, allowing for superior control during highly technical sports.

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284. (A) A broad base of motor experiences can enhance an athlete's ability to learn new skills.
An athlete's history of practicing various movements creates a broad foundation that facilitates the acquisition of new skills. By having a diverse repository of motor experiences, the

exercises, the cardiorespiratory system effectively supplies enough oxygen to the muscles to balance the metabolic demands. This steady state allows athletes to continue performing without reaching the point of rapid fatigue.

267. (B) The exercise intensity beyond which lactate build-up exceeds its rate of removal.
The lactate threshold represents a critical point during exercise where the body begins to produce lactic acid more quickly than it can be removed from the bloodstream. When an athlete exceeds this intensity, fatigue typically sets in much faster due to the accumulation of metabolic byproducts. Training to increase this threshold allows an individual to sustain higher intensities for longer durations.

268. (A) Primarily aerobic and specific endurance.
Running a marathon requires the ability to sustain a long-duration effort through aerobic metabolism, which efficiently uses oxygen for energy. Additionally, since the athlete is performing the exact movements and meeting the unique physical demands required for distance running, this also demonstrates specific endurance. Combining these elements is necessary for maintaining a competitive pace throughout the entirety of a long-distance race.

269. (C) Delivering oxygen and nutrients to the working muscles.
Endurance performance relies heavily on the heart and lungs to maintain a steady flow of oxygenated blood to the active muscles. These systems work together to transport the necessary nutrients and oxygen required for energy production while also removing metabolic waste. The efficiency of this delivery process determines how long an athlete can sustain physical exertion before fatigue limits their performance.

270. (D) Movement economy
Movement economy is a measure of how much energy an athlete consumes while performing a specific task at a given intensity. Individuals with high economy use less oxygen and energy to maintain their speed, which preserves their resources for longer durations. Improving this factor through better technique or conditioning is essential for maximizing endurance performance in various athletic activities.

271. (C) Reaction speed
Reaction speed represents the time elapsed between the presentation of a stimulus and the initiation of a physical response. In sprinting, this is exemplified by how quickly an athlete moves out of the starting blocks once the gun is fired. Minimizing this delay is crucial in short-distance races where every fraction of a second significantly impacts the final race outcome.

272. (B) The composition of muscle fibres.
An athlete's inherent potential for speed is largely influenced by the proportion of fast-twitch muscle fibres in their body. These fibres are capable of contracting rapidly and forcefully, making them ideal for high-velocity movements. Because the distribution of these fibres is mostly determined by genetics, it represents a foundational limit on how fast an individual can naturally perform athletic tasks.

273. (D) Movement speed
Movement speed involves the rapid execution of a single, isolated motor action. For a javelin thrower, the quick acceleration of the throwing arm is a classic example of this ability. Unlike locomotor speed, which involves moving the entire body, movement speed focuses on the velocity of specific body parts performing a discrete task in the shortest possible time frame.

274. (A) A complex approach that includes strength, flexibility, and technique.
Improving speed requires a multifaceted training strategy because it depends on several interconnected physical and technical factors. While muscle fibre composition provides the genetic base, enhancing explosive strength, maintaining joint flexibility, and refining movement technique are all necessary to maximize velocity. Addressing these various elements through specific drills ensures that the athlete can effectively translate their power into fast movements.

275. (C) It governs the speed and coordination of muscle contractions.
Neuromuscular efficiency describes the effectiveness with which the nervous system communicates with the muscles to produce movement. This efficiency determines how quickly and precisely muscle fibres are activated

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relevant to the unique requirements of an athlete's chosen sport. This ensures that the physiological and technical adaptations developed during practice will effectively translate into better performance during competition. Following this principle helps coaches create more efficient and goal-oriented schedules that address the athlete's actual needs.

294. (B) Long-term planning.
A macrocycle represents a long-term approach to training, often covering an entire season or several years. It provides the broad structure for an athlete's preparation, outlining the major phases of development and the timing of key events. This level of planning is essential for ensuring that all shorter-term training units align with the ultimate goals of the overall competitive cycle.

295. (C) Provide a structured approach to optimize development and timing of peak performance.
Planning is vital in sports training because it offers a systematic framework for achieving athletic goals. It allows for the organized progression of training loads and recovery, which optimizes the athlete's physical development. Furthermore, a well-structured plan ensures that the individual reaches their highest performance capabilities exactly when needed for competition, rather than leaving their progress to chance or intuition.

296. (D) General Preparatory sub-phase.
The general preparatory sub-phase focuses on building a broad foundation of physical fitness through high volumes of work. To accommodate this large amount of activity without causing excessive fatigue, the intensity of the exercises is kept relatively low. This combination allows the body to develop the necessary aerobic base and muscular endurance required for more intense and specific training later on.

297. (A) To facilitate psychological and physiological recovery.
The transitional period occurs after the competitive season and is dedicated to allowing the athlete's body and mind to recover from the stresses of high-level performance. Through low-intensity and enjoyable activities, athletes can maintain some fitness while healing from minor injuries and mental fatigue. This recovery phase is essential for preventing burnout and ensuring the athlete is ready for the next cycle.

298. (B) Reduced volume and high intensity.
In the competition period, the focus shifts toward maintaining fitness and achieving peak performance. Training volume is decreased to ensure that the athlete is fresh and well-rested for matches. However, the intensity is kept high to mimic the actual demands of competition, allowing the athlete to refine their technical skills and tactical execution under realistic, high-pressure conditions.

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299. (B) Talent identification.
Talent identification is the structured process of finding young individuals who show great potential for success in a particular sport. This is achieved by evaluating various physical, mental, and physiological traits that are known to contribute to high performance. By identifying these promising athletes early, sports organizations can provide them with the specialized coaching and support needed to reach their full potential.

300. (A) From General Preparatory to Specific Preparatory sub-phase.
Transitioning from general fitness work to drills that mimic actual sport movements marks the shift from the general to the specific preparatory sub-phase. In this latter stage, the training becomes more tailored to the unique physiological and technical requirements of the athlete's event. This progression ensures that the foundational strength and endurance built previously are translated into sport-specific skills and performance.

CHAPTER 08

Research and Statistics in Physical Education

1. Which of the following best defines research in the context of physical education?
(A) A casual, informal collection of data regarding the performance of athletes.
(B) A systematic process of inquiry used to discover or revise facts and theories.
(C) The routine process of summarizing existing sports articles and textbooks.
(D) The simple act of training athletes using standard traditional methods.

2. Which primary method of research involves studying past events to understand the present?
(A) Historical Research
(B) Experimental Research
(C) Descriptive Research
(D) Philosophical Research

3. Identify the correct statement regarding the importance of research in physical education.
(A) It primarily serves to increase the complexity of professional coaching techniques.
(B) It is only important for academic publishing rather than for practical application.
(C) It is crucial for developing new principles to improve performance and health.
(D) Its main purpose is to validate pre-existing and traditional beliefs without question.

4. A researcher wants to understand the current fitness levels of university students. They collect data on height, weight, BMI, and cardiovascular endurance at a single point in time. Which method of research is being applied?
(A) Historical Research
(B) Case Study Research
(C) Experimental Research
(D) Descriptive Research

5. Which of the following is NOT a primary classification of research?
(A) Descriptive
(B) Historical
(C) Financial
(D) Experimental

6. A researcher provides a false purpose of the study to the participants to avoid influencing their natural behavior. Which ethical issue is most directly relevant to this situation?
(A) Confidentiality
(B) Deception
(C) Anonymity
(D) Plagiarism

7. Consider the following statements and select the correct option:
Statement I : Descriptive research aims to accurately and systematically describe a population, situation, or phenomenon.
Statement II : An experimental research design involves the manipulation of variables to establish cause-and-effect relationships.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

8. What is the most appropriate first step in the research process after conceiving a broad area of interest?
(A) Identification and formulation of a research problem
(B) Selecting a statistical test
(C) Collecting data
(D) Writing the final research report

9. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Ethical guidelines require researchers to obtain informed consent from

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participants.
Reason (R) : Informed consent ensures that participants are fully aware of the research procedures, risks, and their right to withdraw, protecting their autonomy.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

10. A researcher formulates the following statement: "There will be no significant difference in the agility scores of athletes who undergo plyometric training compared to those who undergo traditional training." This is an example of a:
(A) Null hypothesis
(B) Directional hypothesis
(C) Research question
(D) Confounding hypothesis

11. Which research tool consists of a series of written questions for which a respondent provides answers?
(A) Observation checklist
(B) Interview schedule
(C) Grading scale
(D) Questionnaire

12. Consider the following statements about historical research in physical education:
I. It involves the interpretation of past events.
II. It exclusively uses quantitative data for analysis.
III. It helps in understanding the origins and evolution of sports and training methods.
IV. It does not require a critical evaluation of sources.
Which of the above statement(s) is/are correct?
(A) I and III only
(B) II and IV only
(C) I, II, and III only
(D) I and IV only

13. The process of hypothesis testing primarily aims to:
(A) Prove that the initial research hypothesis is absolutely and universally true.
(B) Select the most convenient research tool for the specific study being conducted.
(C) Make a decision about the viability of the null hypothesis using sample data.
(D) Ensure that the chosen sample is perfectly representative of the total population.

14. Which of the following sources is considered a primary source in historical research?
(A) A textbook chapter summarizing the 1936 Olympics.
(B) An encyclopedia entry on the history of basketball.
(C) A documentary film about ancient Greek sports.
(D) An eyewitness account of a specific sporting event.

15. What is the fundamental difference between a questionnaire and an opinionnaire?
(A) A questionnaire collects factual data while an opinionnaire gauges personal beliefs.
(B) A questionnaire uses only closed questions while an opinionnaire uses only open ones.
(C) A questionnaire is for descriptive research while an opinionnaire is for experimental.
(D) There are no measurable differences as both terms are completely interchangeable.

16. Match List I with List II and select the correct answer from the codes given below:
List I : (Research Concept)
P. Experimental Research
Q. Historical Research
R. Descriptive Research
S. Ethical Issue
List II : (Key Feature)
1. Survey of current practices
2. Manipulation of independent variable
3. Evaluation of past records
4. Informed consent
(A) P-2, Q-3, R-1, S-4
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-1, R-2, S-3
(D) P-2, Q-1, R-4, S-3

17. Which of the following is an example of a non-probability sampling technique?
(A) Simple Random Sampling
(B) Purposive Sampling
(C) Systematic Sampling
(D) Stratified Random Sampling

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38. Which of the following is NOT a component of a research proposal?
(A) Introduction and Statement of the Problem
(B) Final and conclusive results of the study
(C) Review of Related Literature
(D) Methodology

39. Consider the following statements about research tools:
I. A questionnaire is best for collecting in-depth, qualitative insights.
II. Observation can be prone to researcher bias (the Hawthorne effect).
III. An interview allows for probing and clarification of responses.
IV. An opinionnaire measures factual data like age and height.
Which of the above statement(s) is/are correct?
(A) I and IV only
(B) II and III only
(C) I and III only
(D) II and IV only

40. When a research finding can be applied to a larger population beyond the sample studied, the study is said to have high:
(A) External validity (Generalizability)
(B) Internal validity
(C) Reliability
(D) Objectivity

41. Which of the following is an example of a research database?
(A) Google
(B) SPSS
(C) PubMed
(D) Microsoft Word

42. The bell-shaped curve that is symmetrical and has specific properties related to its mean and standard deviation is known as the:
(A) Normal probability curve
(B) Bimodal distribution curve
(C) Skewed distribution curve
(D) Random distribution curve

43. Which of the following is an example of a parametric statistical test?
(A) Chi-Square Test
(B) Mann-Whitney U Test
(C) Kruskal-Wallis Test
(D) Analysis of Variance (ANOVA)

44. Consider the following statements and select the correct option:
Statement I : A research report is a detailed account of the research process and its findings.
Statement II : A paper for publication is often a condensed and more focused version of the full research report.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

45. The term "formulation of research problem" refers to:
(A) The final interpretative conclusion or summary of the research study.
(B) The specific selection of a computerized statistical software package.
(C) The process of narrowing a broad topic into a specific researchable question.
(D) The professional act of presenting research findings at a formal conference.

46. Which of the following is a non-parametric alternative to the independent samples t-test?
(A) Wilcoxon Signed-Rank Test
(B) ANOVA
(C) Pearson Correlation
(D) Mann-Whitney U Test

47. In research, what does 'data' fundamentally refer to?
(A) Pieces of information, facts, or statistics collected for reference or analysis.
(B) The final conclusions and interpretations.
(C) The hypothesis being tested.
(D) The research design and methodology.

48. A researcher watches and records the on-court behavior of basketball players during a game without their knowledge. This is an example of what kind of observation?
(A) Participant and overt observation
(B) Non-participant and covert observation
(C) Participant and covert observation
(D) Non-participant and overt observation

49. Arrange the following sampling techniques from probability to non-probability:

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Which of the above statement(s) is/are correct?
(A) I, II, III, IV
(B) II, III, IV, V
(C) I, II, III, V
(D) I, III, IV, V

29. What is the primary function of Microsoft Office in the context of research?
(A) To perform complex non-parametric statistical analyses on data.
(B) To serve as the primary database for global literature searches.
(C) To aid in word processing, data tabulation, and presentations.
(D) To function as a specialized search engine for academic journals.

30. In research ethics, ensuring that the identity of participants is not known to anyone, including the researcher, is called:
(A) Confidentiality
(B) Integrity
(C) Beneficence
(D) Anonymity

31. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The selection of an appropriate statistical technique depends on the research question and the type of data collected.
Reason (R) : Using a parametric test for nominal data will lead to invalid conclusions.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

32. What is a key characteristic of an experimental research design?
(A) The in-depth study of a single individual or group.
(B) The manipulation of one variable to see its effect on another.
(C) The examination of events that have already occurred.
(D) The collection of data through surveys and polls without intervention.

33. Which of the following is considered a probability sampling technique?
(A) Convenience sampling
(B) Stratified random sampling
(C) Judgmental sampling
(D) Quota sampling

34. A T-score is a standard score with a mean of 50 and a standard deviation of 10. This is an example of a:
(A) Grading scale
(B) Research hypothesis
(C) Sampling technique
(D) Research design

35. The process of "Note taking and critical reading" during a literature search primarily helps a researcher to:
(A) Quickly copy and paste large blocks of text for the final research report.
(B) Find articles that only perfectly match their own pre-existing hypothesis.
(C) Synthesize information and identify key themes and academic arguments.
(D) Generate the actual primary data for the study being currently conducted.

36. Match List I with List II and select the correct answer from the codes given below:
List I : (Statistical Term)
P. Mean
Q. Standard Deviation
R. Correlation
S. T-test
List II : (Purpose)
1. Measures the relationship between two variables
2. Compares the means of two groups
3. A measure of central tendency
4. A measure of the dispersion of data
(A) P-3, Q-4, R-1, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-3, Q-1, R-4, S-2
(D) P-4, Q-3, R-2, S-1

37. What type of data is represented by the jersey numbers of football players?
(A) Ordinal
(B) Interval
(C) Nominal
(D) Ratio

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18. A research design where the researcher manipulates an independent variable but does not have full control over the assignment of subjects to groups is known as:
(A) Quasi-Experimental Design
(B) Pre-Experimental Design
(C) True Experimental Design
(D) Historical Design

19. Identify the incorrect statement regarding a research hypothesis.
(A) It is a tentative statement about the relationship between two or more variables.
(B) It must be testable and falsifiable.
(C) It is always stated in the form of a question.
(D) It guides the direction of the research study.

20. Arrange the following steps of the research process in the correct chronological order:
P. Data collection
Q. Formulation of research problem
R. Statistical analysis of data
S. Literature review
(A) S, Q, P, R
(B) Q, P, S, R
(C) P, S, R, Q
(D) Q, S, P, R

21. A researcher is studying the effect of a new diet on the weight of wrestlers. The 'new diet' in this study is the:
(A) Dependent variable
(B) Extraneous variable
(C) Independent variable
(D) Control variable

22. In the context of data, what is the defining characteristic of 'Interval' data?
(A) It has a true zero point.
(B) It has equal intervals between values but lacks a true zero.
(C) It allows for categorization and ranking only.
(D) It only allows for classification into distinct categories.

23. Which of the following is NOT a purpose of a literature search?
(A) To identify gaps in existing research.
(B) To develop a theoretical framework.
(C) To avoid unintentional duplication of a study.
(D) To create primary data for analysis.

24. A grading scale like Stanine, which divides a distribution into nine categories, is based on the properties of the:
(A) Normal probability curve
(B) Chi-square distribution
(C) Binomial distribution
(D) t-distribution

25. Consider the following statements and select the correct option:
Statement I : Parametric statistical techniques require data to be normally distributed.
Statement II : Non-parametric statistical techniques are used when the assumptions of parametric tests are not met.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

26. Which section of a research report typically provides a brief, comprehensive summary of the entire study?
(A) Abstract
(B) Methodology
(C) Introduction
(D) Discussion

27. A researcher assigns a number to each person in a population and then uses a random number generator to select participants. This is an example of which sampling technique?
(A) Convenience Sampling
(B) Quota Sampling
(C) Snowball Sampling
(D) Simple Random Sampling

28. Consider the following statements about the formulation of a research problem:
I. The problem should be clear and unambiguous.
II. The problem should express a relationship between variables.
III. The problem should be grounded in theory or previous research.
IV. The problem must always be solvable within a week.
V. The problem should be ethically neutral.

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P. Quota Sampling
Q. Simple Random Sampling
R. Convenience Sampling
S. Cluster Sampling
(A) P, R, Q, S
(B) Q, S, P, R
(C) Q, P, S, R
(D) S, R, Q, P

50. The importance of statistical processes in research lies in their ability to:
(A) Organize, summarize, and interpret quantitative data objectively.
(B) Eliminate the requirement for conducting a thorough literature review.
(C) Provide an absolute guarantee that the research hypothesis is correct.
(D) Act as a complete replacement for standard ethical considerations.

51. Which part of a research proposal outlines the step-by-step plan for how the study will be conducted?
(A) Introduction
(B) Rationale
(C) Methodology
(D) Bibliography

52. Consider the following statements about SPSS:
I. It is a powerful statistical package for data analyses.
II. It is a search engine for finding online journals.
III. It can be used for both parametric and non-parametric tests.
IV. It is primarily a word-processing software like Microsoft Word.
V. It helps in managing data sets and generating tables and graphs.
Which of the above statement(s) is/are correct?
(A) I, II, IV
(B) II, III, IV
(C) I, III, V
(D) I, IV, V

53. A hypothesis that predicts a specific direction of the outcome (e.g., "Group A will score higher than Group B") is called a:
(A) Null hypothesis
(B) Non-directional hypothesis
(C) Directional hypothesis
(D) Statistical hypothesis

54. The process of "critical reading" during literature search involves:
(A) Accepting all published findings as being the absolute truth.
(B) Evaluating the specific strengths and weaknesses of a source.
(C) Reading only the abstract and final conclusion of a research paper.
(D) Skimming various articles for keywords without deeper understanding.

55. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : A well-defined research problem is a prerequisite for successful research.
Reason (R) : A clear research problem guides the choice of research design, data collection methods, and analysis techniques.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

56. Which of the following best describes 'historical research'?
(A) A systematic collection and evaluation of data related to past occurrences.
(B) A specific study used to determine the current status of a given variable.
(C) A study that manipulates a variable to observe a resulting effect.
(D) An in-depth investigation regarding a single case or individual.

57. A type of data that can be ranked in order, but the intervals between the ranks are not necessarily equal, is called:
(A) Nominal data
(B) Interval data
(C) Ordinal data
(D) Ratio data

58. Which of the following is NOT a characteristic of the normal probability curve?
(A) It is skewed to the right.
(B) It is bell-shaped.

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(A) SPSS is a good software.
(B) Data will be collected using a questionnaire.
(C) The effect of high-intensity interval training on the resting heart rate of collegiate soccer players.
(D) Research is important.

100. Consider the following components of a research study:
I. A testable hypothesis
II. Use of an appropriate research design
III. Application of statistical analysis
IV. Disregard for ethical principles
Which of the above statement(s) is/are essential for a methodologically sound research study?
(A) I and II only
(B) I, II, and III only
(C) III and IV only
(D) I, II, III, and IV

101. A "Z-score" is a type of standard score that has a mean of 0 and a standard deviation of 1. It is used as a:
(A) Research design
(B) Sampling method
(C) Grading scale
(D) Hypothesis

102. What is the primary purpose of preparing a research proposal?
(A) To present the final, analyzed data of a completed research study.
(B) To obtain approval and funding for a planned research project.
(C) To publish the findings in an international academic journal.
(D) To summarize research that has already been finished and reported.

103. Which of the following correctly pairs a research tool with its primary function?
(A) Interview - To collect standardized quantitative data from a large sample.
(B) Questionnaire - To conduct an in-depth, unstructured conversation.
(C) Opinionnaire - To measure factual physical metrics such as height and weight.
(D) Observation - To directly witness and record behaviors as they occur.

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104. The population of a university is divided into faculties (e.g., Arts, Science, Education), and then a random sample of students is selected from each faculty. This is an example of:
(A) Stratified Random Sampling
(B) Simple Random Sampling
(C) Cluster Sampling
(D) Convenience Sampling

105. Consider the following statements and select the correct option:
Statement I : The 'Introduction' section of a research report sets the context and states the problem.
Statement II : The 'Discussion' section merely repeats the results without interpretation.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

106. In an experimental study, a variable that is not the independent variable but could potentially affect the outcome (dependent variable) is called:
(A) An extraneous or confounding variable
(B) A constant
(C) A hypothesis
(D) A research question

107. All of the following are examples of non-probability sampling EXCEPT:
(A) Quota sampling
(B) Purposive sampling
(C) Snowball sampling
(D) Systematic sampling

108. Arrange the following steps for preparing a paper for publication in a logical sequence:
P. Submit manuscript to the journal
Q. Draft the manuscript according to journal guidelines
R. Select a target journal
S. Respond to peer reviewer comments
(A) R, P, S, Q
(B) R, Q, P, S
(C) Q, R, P, S
(D) P, R, Q, S

109. What does the "application of parametric statistical techniques" require?

Statement I : An opinionnaire is designed to measure an individual's beliefs or attitudes towards an issue.
Statement II : A questionnaire is primarily used to collect factual, demographic information.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

69. The main purpose of a "paper for presentation" at a conference is to:
(A) Provide a full, exhaustive detail of every aspect of the research.
(B) Secure funding for a future research project from the sponsors.
(C) Disseminate key findings concisely to an academic audience.
(D) Publish the research in a high-impact professional journal.

70. "What is the relationship between hours of sleep and athletic performance?" This is an example of a:
(A) Null hypothesis
(B) Research problem formulated as a question
(C) Statistical conclusion
(D) Research design

71. When a researcher uses someone else's work or ideas without giving proper credit, it is known as:
(A) Fabrication
(B) Falsification
(C) Deception
(D) Plagiarism

72. In the normal probability curve, what percentage of scores falls within one standard deviation (±1 SD) of the mean?
(A) Approximately 68%
(B) Approximately 95%
(C) Approximately 34%
(D) Approximately 99%

73. Arrange the typical sections of a research paper for publication in chronological order:
P. Results
Q. Introduction
R. Discussion
S. Methods
(A) Q, P, S, R
(B) S, Q, P, R
(C) Q, S, P, R
(D) P, R, S, Q

74. The "e-mail" application is useful in the research process primarily for:
(A) Communication with collaborators, supervisors, and participants.
(B) Complex statistical modeling.
(C) Searching academic databases.
(D) Writing and formatting the research manuscript.

75. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Non-parametric tests are often called distribution-free tests.
Reason (R) : They do not require the assumption that the data comes from a specific distribution, such as the normal distribution.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

76. The identification of a research problem should be influenced by all of the following EXCEPT:
(A) The researcher's interest and expertise.
(B) The guarantee of a positive and significant result.
(C) The theoretical and practical significance of the problem.
(D) The availability of resources and data.

77. If a researcher studies the same group of individuals repeatedly over a long period, this is a type of:
(A) Cross-sectional descriptive study
(B) Historical study
(C) Longitudinal descriptive study
(D) Pre-experimental study

78. Consider the following statements about research ethics:
I. Plagiarism involves using another's work without credit.
II. Informed consent is optional for studies

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(C) It is symmetrical around the mean.
(D) The mean, median, and mode coincide.

59. A researcher wants to compare the mean VO_2 max scores of three groups: runners, swimmers, and cyclists. Which statistical test is most appropriate?
(A) Independent t-test
(B) Paired t-test
(C) Chi-square test
(D) Analysis of Variance (ANOVA)

60. Match List I with List II and select the correct answer from the codes given below:
List I : (Research Term)
P. Research Proposal
Q. Abstract
R. Research Report
S. Paper for Publication
List II : (Description)
1. A brief summary of a completed study
2. A detailed, comprehensive account of the entire research project
3. A plan outlining a proposed research study
4. A concise manuscript submitted to a journal
(A) P-1, Q-2, R-3, S-4
(B) P-3, Q-1, R-2, S-4
(C) P-2, Q-4, R-1, S-3
(D) P-3, Q-2, R-4, S-1

61. Identifying an incorrect pair from the following:
(A) Descriptive Research - Survey
(B) Experimental Research - Manipulation of variable
(C) Historical Research - Predicting the future
(D) Ethical Issue - Plagiarism

62. The purpose of a 'search engine' in the context of a literature search is to:
(A) Perform statistical analysis on the data collected in the study.
(B) Write the final research report for the researcher automatically.
(C) Guarantee the absolute credibility of every source found online.
(D) Index web pages and help users find information on the internet.

63. Consider the following statements about sampling:
I. Probability sampling ensures every member of the population has a known chance of being selected.
II. Non-probability sampling is often used for convenience and speed.
III. Simple random sampling is a form of non-probability sampling.
IV. Generalizing findings from non-probability samples is statistically more robust.
Which of the above statement(s) is/are correct?
(A) III and IV only
(B) I and II only
(C) I and III only
(D) II and IV only

64. What is a key limitation of the interview as a research tool?
(A) It is not suitable for collecting in-depth information.
(B) It can be time-consuming and is susceptible to interviewer bias.
(C) It cannot be used to clarify participant responses.
(D) It only allows for the collection of quantitative data.

65. A researcher divides the population into subgroups (strata) based on a characteristic (e.g., age groups) and then performs random sampling within each subgroup. This technique is called:
(A) Cluster Sampling
(B) Stratified Random Sampling
(C) Systematic Sampling
(D) Convenience Sampling

66. In an experimental design, a group that does not receive the experimental treatment is called the:
(A) Control group
(B) Treatment group
(C) Experimental group
(D) Sample group

67. Which of the following represents ratio-level data?
(A) Finishing position in a race (1st, 2nd, 3rd)
(B) Temperature in Celsius
(C) Reaction time in milliseconds
(D) Gender (Male, Female)

68. Consider the following statements and select the correct option:

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(D) Create more complex and difficult rules for organized sports.

89. Consider the following statements and select the correct option:
Statement I : A research proposal is written before the research is conducted.
Statement II : A research report is written after the research is completed.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

90. A researcher wants to determine if there is a significant association between gender (male/female) and preference for a type of sport (individual/team). Which statistical test would be most appropriate?
(A) Chi-square test
(B) T-test
(C) ANOVA
(D) Pearson Correlation

91. The step of 'note taking' during a literature review should focus on:
(A) Copying entire paragraphs verbatim to save time during writing.
(B) Downloading PDF files without actually reading the content.
(C) Noting down information that only supports the researcher's bias.
(D) Recording bibliographic details and summarizing findings personally.

92. What is the main purpose of an experimental design?
(A) To describe the characteristics of a population.
(B) To establish cause-and-effect relationships between variables.
(C) To explore the history of a phenomenon.
(D) To develop a new theory from qualitative data.

93. A test that measures what it is intended to measure is considered to be:
(A) Reliable
(B) Objective
(C) Valid
(D) Subjective

94. The data collected through questionnaires or opinionnaires is primarily what type?
(A) Secondary data
(B) Historical data
(C) Meta-analysis data
(D) Primary data

95. In a normal distribution, the mean, median, and mode are:
(A) All located at the center of the distribution.
(B) Located at different points.
(C) Skewed towards the right tail.
(D) Not relevant to the curve's properties.

96. Which of the following is an ethical requirement in research involving human subjects?
(A) The researcher must guarantee a positive outcome for the participants.
(B) Participants must be fully informed about the potential risks and benefits.
(C) The researcher should hide the true purpose of the study in all cases.
(D) Data should be shared publicly with participants' names attached.

97. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : Sample selection is a critical step in the research process.
Reason (R) : The extent to which research findings can be generalized to the population depends heavily on the representativeness of the sample.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

98. A study examining the training logs of a famous athlete from the 1950s to understand their methods would be classified as:
(A) Historical Research
(B) Experimental Research
(C) Descriptive Research
(D) Case Study

99. Which of the following is an example of a research problem?

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involving human subjects.
III. Confidentiality means protecting the identity of participants.
IV. Fabrication of data is an acceptable practice to support a hypothesis.
V. Researchers should aim to maximize benefits and minimize harm.
Which of the above statement(s) is/are correct?
(A) I, II, III
(B) II, IV, V
(C) I, III, V
(D) I, IV, V

79. Which statistical software is standard for data analyses in research?
(A) SPSS
(B) R
(C) Stata
(D) SAS

80. A hypothesis is best described as:
(A) A proven fact.
(B) A testable prediction about the outcome of a study.
(C) A conclusive answer to the research question.
(D) The summary of the research findings.

81. Which research tool is most appropriate for gaining deep, qualitative insights into an individual's personal experiences and perspectives on a training program?
(A) A multiple-choice questionnaire
(B) An in-depth interview
(C) A checklist for skill observation
(D) A Likert-scale opinionnaire

82. The process of critically reading and taking notes from online journals, library books, and research databases is part of the:
(A) Literature search phase
(B) Data collection phase
(C) Statistical analysis phase
(D) Report writing phase

83. In hypothesis testing, a Type I error occurs when a researcher:
(A) Correctly rejects a false null hypothesis.
(B) Correctly fails to reject a true null hypothesis.
(C) Incorrectly rejects a true null hypothesis.
(D) Incorrectly fails to reject a false null hypothesis.

84. Identifying a correct pair from the following:
(A) SPSS - Search Engine
(B) Null Hypothesis - Statement of difference
(C) Probability Sampling - Convenience Sampling
(D) Normal Curve - Symmetrical distribution

85. Which of the following is an example of a non-parametric statistical technique?
(A) Pearson product-moment correlation
(B) Independent samples t-test
(C) Chi-square test
(D) One-way ANOVA

86. Match List I with List II and select the correct answer from the codes given below:
List I : (Sampling Technique)
P. Simple Random
Q. Systematic
R. Purposive
S. Convenience
List II : (Description)
1. Selecting every nth individual from a list
2. Selecting participants based on their easy availability
3. Selecting participants who are deemed 'typical' by the researcher
4. Giving every individual an equal chance of being selected
(A) P-1, Q-4, R-2, S-3
(B) P-4, Q-1, R-3, S-2
(C) P-2, Q-3, R-1, S-4
(D) P-4, Q-2, R-3, S-1

87. Which of the following does NOT represent a core method of research?
(A) Descriptive
(B) Historical
(C) Experimental
(D) Astrological

88. The primary importance of research in physical education is to:
(A) Establish a body of knowledge to guide practice and policy.
(B) Fulfill a mandatory and formal academic degree requirement.
(C) Prove that traditional methods are always inherently superior.

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(A) The data must be nominal or categorical.
(B) The sample size must be very small.
(C) The data should meet certain assumptions, such as normal distribution and homogeneity of variance.
(D) The research must be historical in nature.

110. Identifying the incorrect statement about a literature search:
(A) It helps in identifying what is already known about a topic.
(B) It can help refine the research question.
(C) It can reveal different methodologies used to study a problem.
(D) It is the final step in the research process.

111. Which method of research would be most suitable to determine the average daily screen time of adolescents in a particular city?
(A) Descriptive Research (Survey)
(B) Historical Research
(C) Experimental Research
(D) Philosophical Research

112. A "research hypothesis" is also known as an:
(A) Null hypothesis (H0)
(B) Alternative hypothesis (H1)
(C) Untestable statement
(D) Final conclusion

113. Match List I with List II and select the correct answer from the codes given below:
List I : (Computer Application)
P. SPSS
Q. Microsoft Word
R. Search Engine (e.g., Google Scholar)
S. E-mail
List II : (Primary Research Use)
1. Communicating with co-authors
2. Finding academic literature
3. Writing the research report
4. Analyzing quantitative data
(A) P-4, Q-3, R-2, S-1
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-1, R-3, S-2
(D) P-3, Q-4, R-2, S-1

114. The practice of keeping a participant's data private and not revealing it to unauthorized individuals is known as:
(A) Confidentiality
(B) Anonymity
(C) Plagiarism
(D) Fabrication

115. A researcher develops a new training program and wants to compare its effectiveness against a traditional program. She randomly assigns participants to two groups, one for each program. This is an example of:
(A) Descriptive research
(B) Historical research
(C) Experimental research
(D) Survey research

116. Which of the following statements about the 'Methods' section of a research report is correct?
(A) It should provide a detailed interpretation of the findings.
(B) It should be brief and vague to protect intellectual property.
(C) It should present the raw data in tables and figures.
(D) It should describe the participants, tools, and procedures in enough detail for replication.

117. Which of the following is NOT a measure of central tendency?
(A) Mean
(B) Median
(C) Standard Deviation
(D) Mode

118. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The Normal Probability Curve is a theoretical model.
Reason (R) : Real-world data sets perfectly and exactly fit the normal curve in all situations.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

119. A study based on data collected from records, documents, and eyewitness accounts of the first modern Olympic Games would be classified as what type of research?
(A) Experimental

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(D) I, II, III, and IV

201. Which research method would be most appropriate for investigating the cause-and-effect relationship between a new coaching technique and swimming speed?
(A) Historical
(B) Descriptive
(C) Experimental
(D) Correlational

202. A researcher is formulating a problem. Which of the following is the most well-formulated research problem?
(A) To investigate the effect of static versus dynamic stretching on 100m sprint performance in collegiate athletes.
(B) A study of sports.
(C) Is exercise good?
(D) Data on stretching and performance.

203. Consider the following statements and select the correct option:
Statement I : A directional hypothesis specifies the expected direction of the relationship between variables.
Statement II : A non-directional hypothesis simply states that a relationship exists, without predicting the direction.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

204. Which of the following is a primary source for a literature search?
(A) A textbook summarizing various studies.
(B) An original research article published in a peer-reviewed journal.
(C) An encyclopedia entry.
(D) A review article that synthesizes findings from multiple studies.

205. If a population is divided into naturally occurring groups (e.g., all the schools in a district) and the researcher randomly selects some of these groups to include in the study, this is an example of:
(A) Simple random sampling
(B) Stratified sampling
(C) Cluster sampling
(D) Quota sampling

206. Which type of data possesses a true zero point, allowing for meaningful ratio comparisons (e.g., "twice as fast")?
(A) Nominal
(B) Ordinal
(C) Interval
(D) Ratio

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207. A Hull scale is a grading scale derived from the normal curve with a mean of 50 and a standard deviation of:
(A) 14
(B) 1
(C) 10
(D) 15

208. The Mann-Whitney U test is a non-parametric alternative to which parametric test?
(A) Paired samples t-test
(B) Independent samples t-test
(C) One-way ANOVA
(D) Pearson correlation

209. A research abstract should be:
(A) Long and detailed, covering every aspect of the study.
(B) Accurate, concise, and self-contained.
(C) Vague and general, to create intrigue.
(D) Written in informal, conversational language.

210. Match List I with List II and select the correct answer from the codes given below:
List I : (Term)
P. Hypothesis
Q. Sample
R. Population
S. Variable
List II : (Definition)
1. A characteristic that can take on different values
2. A testable statement about a relationship
3. The entire group that the researcher wants to draw conclusions about
4. A subset of the population selected for a study
(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-3, S-1
(C) P-3, Q-1, R-4, S-2

report for review.

130. A researcher states: "There is a positive relationship between flexibility and gymnastic performance." This is an example of a:
(A) Directional research hypothesis
(B) Null hypothesis
(C) Research question
(D) Non-directional research hypothesis

131. In research ethics, the principle of 'beneficence' implies that:
(A) The researcher must keep all data anonymous in every study.
(B) The participants must be selected from a diverse population base.
(C) Research should aim to maximize benefits and minimize harms.
(D) The researcher must publish the results regardless of the outcome.

132. Descriptive research is concerned with:
(A) Establishing what will be.
(B) Establishing what was.
(C) Establishing what ought to be.
(D) Establishing what is.

133. Consider the following statements about research methods:
I. Descriptive research describes the current state of affairs.
II. Historical research analyzes past events.
III. Experimental research involves manipulating variables to observe effects.
IV. Experimental research is the only valid method in physical education.
V. Historical research relies solely on numerical data.
Which of the above statement(s) is/are correct?
(A) I, II, III
(B) I, IV, V
(C) II, III, IV
(D) I, III, V

134. Which of the following is a key step in formulating a research problem?
(A) Conducting the statistical analysis.
(B) Reviewing existing literature on a broad topic.
(C) Writing the abstract.
(D) Presenting the paper at a conference.

135. The main disadvantage of using a questionnaire is:
(A) It is very expensive to administer.
(B) It can only be used in experimental research.
(C) It takes a very long time to collect data from a large group.
(D) It does not allow for probing or clarification of ambiguous answers.

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136. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : In an interview, the researcher can ask follow-up questions.
Reason (R) : Interviews provide an opportunity to gather rich, in-depth qualitative data that may be missed by a questionnaire.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

137. Which of the following is the most appropriate search strategy when using an online research database?
(A) Typing a full paragraph describing the research project.
(B) Entering a single, very general term like "sports".
(C) Using specific keywords and Boolean operators like AND.
(D) Asking the database a direct question in natural language.

138. In a study, if the sample is not representative of the population, the results may suffer from:
(A) Sampling bias
(B) High reliability
(C) High validity
(D) High objectivity

139. Which of the following is NOT a type of data?
(A) Nominal
(B) Ordinal
(C) Ratio
(D) Hypothetical

140. Match List I with List II and select the correct answer from the codes given below:

List I : (Statistical Concept)
P. Parametric Test
Q. Non-parametric Test
R. Normal Curve
S. Grading Scale
List II : (Example/Feature)
1. Mann-Whitney U test
2. T-score
3. t-test
4. Symmetrical distribution
(A) P-1, Q-3, R-2, S-4
(B) P-3, Q-1, R-4, S-2
(C) P-2, Q-4, R-1, S-3
(D) P-4, Q-2, R-3, S-1

141. The importance of statistics in research is primarily to:
(A) Make the research report appear more scientific to readers.
(B) Eliminate the requirement for having a large sample size.
(C) Provide an objective basis for drawing conclusions from data.
(D) Formulate the initial research hypothesis before data collection.

142. A non-parametric test is generally used when:
(A) The data is perfectly normally distributed.
(B) The sample size is extremely large.
(C) The researcher wants to prove the null hypothesis.
(D) The assumptions for a parametric test are violated, or the data is ordinal/nominal.

143. Which Microsoft Office application is most suitable for creating a database of research articles and writing the final report?
(A) Word and Access (or just Word for writing)
(B) Excel and PowerPoint
(C) Outlook and Publisher
(D) PowerPoint and Word

144. The abstract of a research paper should:
(A) Provide a detailed critique of other research currently available in the field.
(B) Be a concise summary of the study's purpose, methods, and final conclusions.
(C) List all the various references and citations used throughout the research paper.
(D) Be written by the researcher before any of the research is actually conducted.

145. Consider the following statements and select the correct option:
Statement I : Historical research can help prevent the repetition of past mistakes in coaching and training.
Statement II : The primary sources for historical research are always completely objective and free from bias.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

146. A "null hypothesis" (H0) is a statement of:
(A) No effect, no difference, or no relationship.
(B) A significant effect or relationship.
(C) The researcher's personal belief.
(D) A proven scientific law.

147. A researcher is interested in the culture of a specific marathon running club and joins the club to observe and interact with the members. This is an example of:
(A) Non-participant observation
(B) A controlled experiment
(C) Participant observation
(D) A survey

148. Which of the following is a key component of a literature review?
(A) A detailed budget for the research project.
(B) The raw data collected by the researcher.
(C) The step-by-step instructions for the experiment.
(D) A synthesis and critical analysis of previous research.

149. In a sampling technique where a researcher selects the first 50 people they meet who are willing to participate, what method is being used?
(A) Simple Random Sampling
(B) Stratified Sampling
(C) Convenience Sampling
(D) Systematic Sampling

150. Which of the following is an example of a research database for academic literature?
(A) Facebook
(B) Google Scholar
(C) SPSS

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(D) Microsoft Excel

151. A 'Sigma Score' or 'Z-score' is a grading scale that is derived from the properties of the:
(A) Research hypothesis
(B) Sampling technique
(C) Experimental design
(D) Normal probability curve

152. Consider the following statements about statistical techniques:
I. Parametric tests are generally more powerful than non-parametric tests if assumptions are met.
II. Non-parametric tests are suitable for nominal and ordinal data.
III. ANOVA is a non-parametric test.
IV. The choice of a statistical test does not depend on the research question.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) III and IV only
(C) I and III only
(D) II and IV only

153. What is the primary ethical concern when conducting research with children?
(A) Ensuring the research is published quickly in a high-impact journal.
(B) Making sure the results are statistically significant for the study.
(C) Obtaining assent from the child and informed consent from guardians.
(D) Using the most complicated and rigorous research design available.

154. Which of these research methods would involve the manipulation of an independent variable?
(A) A study comparing the effects of two different stretching protocols on flexibility.
(B) A survey of athletes' nutritional habits.
(C) A historical review of the rules of soccer.
(D) A case study of a single elite athlete.

155. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The research problem should be stated clearly and concisely.
Reason (R) : A clear statement of the problem provides direction for the researcher and clarity for the reader.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

156. The formulation of a hypothesis is a critical step in which type of research?
(A) Historical research
(B) Experimental and certain descriptive research
(C) Philosophical research
(D) All research without exception

157. Which of the following is NOT a standard tool of research?
(A) Questionnaires
(B) Interviews
(C) Astrological charts
(D) Observation

158. Arrange the following levels of measurement in order from least to most informative:
P. Ratio
Q. Interval
R. Ordinal
S. Nominal
(A) P, Q, R, S
(B) S, Q, R, P
(C) R, S, Q, P
(D) S, R, Q, P

159. The main purpose of a 'paper for publication' is to:
(A) Communicate research findings to the broader scientific community.
(B) Secure initial funding for a project from an external agency.
(C) Serve as a personal record of the researcher's daily process.
(D) Practice writing skills for the primary lead researcher.

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160. Match List I with List II and select the correct answer from the codes given below:
List I : (Activity)
P. Reviewing past studies
Q. Testing the effect of a variable
R. Surveying current attitudes

S. Protecting participant identity

List II : (Research Concept)

1. Descriptive Method
2. Experimental Method
3. Ethical Issue (Confidentiality)
4. Literature Search

(A) P-1, Q-2, R-4, S-3
(B) P-4, Q-3, R-1, S-2
(C) P-4, Q-2, R-1, S-3
(D) P-2, Q-1, R-3, S-4

161. A researcher finds that as training volume increases, injury rates also increase. This suggests what type of relationship?
(A) A negative correlation
(B) A positive correlation
(C) No correlation
(D) A causal relationship

162. Which of the following represents a non-probability sampling method?
(A) Snowball Sampling
(B) Systematic Sampling
(C) Cluster Sampling
(D) Simple Random Sampling

163. Consider the following statements and select the correct option:
Statement I : The normal probability curve is unimodal.
Statement II : The normal probability curve is asymptotic, meaning the tails get closer to the x-axis but never touch it.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

164. In the context of computer applications for research, Microsoft Excel is most useful for:
(A) Advanced statistical modeling like structural equation modeling.
(B) Writing the final research manuscript with complete citations.
(C) Searching the internet for specialized academic journal articles.
(D) Storing, organizing, and performing calculations on data.

165. The final section of a research report, where the findings are interpreted, limitations are discussed, and conclusions are drawn, is the:
(A) Introduction
(B) Methods
(C) Discussion
(D) Results

166. Which type of research is primarily concerned with "what was?"
(A) Descriptive
(B) Historical
(C) Experimental
(D) Survey

167. A hypothesis stating "There will be no difference in reaction time between male and female badminton players" is a:
(A) Directional alternative hypothesis
(B) Non-directional alternative hypothesis
(C) Research question
(D) Null hypothesis

168. Consider the following statements:
I. An interview is a research tool where the researcher verbally asks questions.
II. Observation involves systematically watching and recording behavior.
III. An opinionnaire measures attitudes or beliefs.
IV. A questionnaire can only contain open-ended questions.
Which of the above statement(s) is/are correct?
(A) I, II, and III only
(B) I and IV only
(C) II, III, and IV only
(D) I, II, III, and IV

169. What is the fundamental purpose of sampling?
(A) To study every single member of a population.
(B) To ensure the research findings are always statistically significant.
(C) To select a representative subset of a population to make inferences about the whole population.
(D) To complicate the research process unnecessarily.

170. Which of the following is a key feature of a library as a source for literature search?

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(A) It offers access to curated collections of books and journals.
(B) It provides unverified information from anonymous web authors.
(C) It is primarily used as a social media interaction platform.
(D) It only contains digital information found on the public internet.

171. The data type that refers to categories that are mutually exclusive, such as 'type of sport' (e.g., swimming, running, cycling), is:
(A) Ordinal
(B) Interval
(C) Ratio
(D) Nominal

172. A T-score is a standardized score used as a grading scale. What are the mean and standard deviation of a T-score distribution?
(A) Mean = 0, SD = 1
(B) Mean = 50, SD = 10
(C) Mean = 100, SD = 15
(D) Mean = 10, SD = 3

173. The use of a t-test is appropriate when a researcher wants to:
(A) Compare the means of three or more groups.
(B) Assess the association between two categorical variables.
(C) Compare the means of two groups.
(D) Measure the relationship between two different variables.

174. A research proposal is best described as:
(A) The final published article.
(B) A summary of completed research.
(C) A list of references.
(D) A blueprint or plan for a research project.

175. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : A literature search is an essential early step in the research process.
Reason (R) : It helps the researcher to understand the existing body of knowledge, identify gaps, and avoid duplicating work that has already been done.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

176. Which of the following is NOT an example of a non-probability sampling technique?
(A) Convenience sampling
(B) Cluster sampling
(C) Quota sampling
(D) Purposive sampling

177. A 'case study' is an in-depth investigation of a single individual, group, or event. It falls under the broader category of which research method?
(A) Experimental Research
(B) Descriptive Research
(C) Historical Research
(D) Statistical Research

178. Consider the following statements about ethical issues in research:
I. Informed consent ensures participants volunteer for the study with full knowledge of what it entails.
II. Deception, though sometimes necessary, must be justified and followed by a debriefing.
III. Anonymity means the researcher knows the participant's identity but promises not to disclose it.
IV. Plagiarism is the act of inventing data or results.
V. It is ethical to force individuals to participate in a research study.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I, III, and V only
(C) II and IV only
(D) III, IV and V only

179. The purpose of an 'abstract' in a research paper is to:
(A) Provide a long and detailed background of the research topic.
(B) List all the professional equipment used during the study.
(C) Offer a brief overview of the entire study and its results.
(D) Present the raw data for re-analysis by other researchers.

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180. Which of the following is a defining characteristic of experimental research?
(A) In-depth interviews
(B) Analysis of historical artifacts
(C) Surveying a large population
(D) Manipulation of an independent variable and control of extraneous variables

181. A researcher wants to study the relationship between hours spent weight training and muscular strength. A suitable hypothesis would be:
(A) Weight training is a popular activity.
(B) The study will use a dynamometer to measure strength.
(C) There will be a positive correlation between hours of weight training and muscular strength.
(D) All participants will be from the university gym.

182. A structured interview is one in which:
(A) The questions are open-ended and the conversation flows freely.
(B) A specific set of questions is asked to all respondents.
(C) The researcher is not present and the respondent writes answers.
(D) There are no specific questions prepared in advance of the meeting.

183. Which of the following is the most credible source for a literature search in physical education?
(A) A personal social media blog about fitness.
(B) A Wikipedia article summarizing a topic.
(C) A discussion forum on a fitness website.
(D) A peer-reviewed article in a major journal.

184. Consider the following statements and select the correct option:
Statement I : Non-probability sampling is less likely to produce a representative sample compared to probability sampling.
Statement II : The findings from a study using convenience sampling have high generalizability.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

185. The measure of how spread out the numbers are in a data set is known as:
(A) Central tendency
(B) Frequency
(C) Dispersion or variability
(D) Correlation

186. The Stanine scale is a grading scale that divides a distribution of scores into how many parts?
(A) 9
(B) 5
(C) 10
(D) 100

187. Which of the following is a parametric test?
(A) Mann-Whitney U Test
(B) Kruskal-Wallis Test
(C) Wilcoxon Signed-Rank Test
(D) Paired Samples t-test

188. Which of the following is a critical part of a research proposal's methodology section?
(A) The expected final results of the study.
(B) A detailed plan for data collection and analysis.
(C) The researcher's personal opinion on the topic.
(D) A list of all previously published articles.

189. Which computer application would be used to create slides for a research presentation at a conference?
(A) SPSS
(B) Microsoft Excel
(C) Microsoft PowerPoint
(D) Google Search

190. Match List I with List II and select the correct answer from the codes given below:
List I : (Research Step)
P. Formulating a Problem
Q. Collecting Data
R. Analyzing Data
S. Reporting Findings
List II : (Associated Tool/Technique)
1. Writing a Research Report
2. Using SPSS
3. Conducting a Survey
4. Reviewing Literature
(A) P-4, Q-3, R-2, S-1
(B) P-1, Q-2, R-3, S-4

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(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-2, R-3, S-1

191. A researcher invents data that was never actually collected to support their hypothesis. This is a serious ethical violation known as:
(A) Fabrication
(B) Plagiarism
(C) Deception
(D) Coercion

192. A "cross-sectional" survey is a type of descriptive research that involves:
(A) Studying the same group of individuals repeatedly over a long period.
(B) Collecting data from a population at one specific point in time.
(C) Examining historical documents to understand a specific past event.
(D) Manipulating a variable to see its effect on an experimental outcome.

193. The process of hypothesis testing involves:
(A) Proving the alternative hypothesis with 100% certainty.
(B) Using sample data to make a probabilistic decision about the null hypothesis.
(C) Selecting the most interesting research problem.
(D) Writing the introduction section of a research report.

194. Which of the following tools would be least effective for understanding the subjective experiences of athletes?
(A) A checklist of physical skills
(B) In-depth interviews
(C) Focus groups
(D) Open-ended questionnaires

195. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The choice between probability and non-probability sampling depends on the research objectives, resources, and the need for generalizability.
Reason (R) : Probability sampling is always superior and should be used in every research study without exception.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

196. The rank order of winners in a competition (1st, 2nd, 3rd) is an example of what type of data?
(A) Nominal
(B) Interval
(C) Ratio
(D) Ordinal

197. The area under the normal probability curve represents:
(A) The total number of variables in a study.
(B) The significance level (alpha).
(C) 100% of the cases or the total probability of all outcomes.
(D) The sample size.

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198. The importance of applying appropriate statistical techniques in research is to:
(A) Make the data collection process easier.
(B) Ensure the validity and reliability of the conclusions drawn from the data.
(C) Help in formulating the initial research question.
(D) Replace the need for an ethical review.

199. Which of the following is NOT a typical component of a research report?
(A) Introduction
(B) Methodology
(C) Results
(D) The researcher's personal diary

200. Consider the following statements about computer applications in research:
I. SPSS is a software designed for statistical analysis.
II. Microsoft Word is a word processor used for writing reports.
III. Search engines like Google Scholar help in finding literature.
IV. E-mail is an effective tool for communicating with research collaborators.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) III and IV only
(C) I, II, and III only

(B) Descriptive
(C) Cross-sectional
(D) Historical

120. Which of the following is a key characteristic of a research problem?
(A) It must be researchable, meaning data can be collected to address it.
(B) It must be a very broad and general topic.
(C) It must have an obvious and pre-determined answer.
(D) It must be a philosophical question with no possible answer.

121. Consider the following statements about data types:
I. Nominal data involves categories with no intrinsic order (e.g., gender).
II. Ordinal data involves categories with a meaningful order but unequal intervals (e.g., race rankings).
III. Interval data has equal intervals but no true zero (e.g., Celsius temperature).
IV. Ratio data has equal intervals and a true zero (e.g., height in cm).
Which of the above statement(s) is/are correct?
(A) I and II only
(B) III and IV only
(C) I, II, and III only
(D) I, II, III, and IV

122. If a researcher wants to investigate the lived experiences of elite gymnasts, which research tool would be most effective?
(A) Semi-structured interviews.
(B) A structured questionnaire with yes/no answers.
(C) An opinionnaire measuring attitudes towards coaching.
(D) A standardized physical fitness test.

123. The use of online journals and research databases has primarily facilitated which step of the research process?
(A) Statistical analysis
(B) Data collection through observation
(C) Formulation of the final report
(D) Literature search

124. A test is administered to a group of athletes on two separate occasions, and the results are highly consistent. This indicates that the test has high:
(A) Validity
(B) Reliability
(C) Objectivity
(D) Subjectivity

125. Which of the following is a non-probability sampling method where the researcher selects participants based on their own judgment of who would be most appropriate for the study?
(A) Simple Random Sampling
(B) Stratified Sampling
(C) Purposive (Judgmental) Sampling
(D) Cluster Sampling

126. Consider the following statements and select the correct option:
Statement I : Hypothesis testing helps researchers make inferences about a population from a sample.
Statement II : A p-value greater than the alpha level (e.g., $p > 0.05$) typically leads to the rejection of the null hypothesis.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

127. The Hull scale, a 10-point grading scale, is based on the principles of the:
(A) Normal probability curve
(B) Chi-square distribution
(C) Binomial expansion
(D) Random number table

128. What is the primary use of a statistical package like SPSS in research?
(A) To search for relevant literature online.
(B) To manage data and perform statistical calculations.
(C) To write and format the research paper.
(D) To create a research proposal from scratch.

129. The process of preparing a paper for presentation involves all of the following EXCEPT:
(A) Summarizing key findings.
(B) Creating visual aids (e.g., PowerPoint slides).
(C) Rehearsing the delivery of the presentation.
(D) Submitting the full, unabridged research

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(D) P-2, Q-3, R-4, S-1

211. Which ethical principle requires that the risks of research participation do not outweigh the potential benefits?
(A) Justice
(B) Respect for Persons
(C) Beneficence
(D) Anonymity

212. A study that describes the training methods, dietary habits, and psychological profiles of elite marathon runners is an example of:
(A) Experimental research
(B) Historical research
(C) Philosophical research
(D) Descriptive research

213. Arrange the following steps in hypothesis testing in the correct sequence:
P. State the null and alternative hypotheses.
Q. Make a decision to reject or fail to reject the null hypothesis.
R. Collect data.
S. Compute the test statistic.
(A) R, P, S, Q
(B) P, S, R, Q
(C) P, R, S, Q
(D) S, R, P, Q

214. An unstructured interview is characterized by:
(A) A strict sequence of pre-determined questions.
(B) A flexible, conversational approach with open-ended questions.
(C) The use of multiple-choice answers.
(D) The absence of an interviewer.

215. A critical part of the literature search process is 'critical reading'. This involves:
(A) Believing everything you read in a published article.
(B) Only reading the title and abstract of articles.
(C) Searching for information that only confirms your pre-existing beliefs.
(D) Assessing the methodology, arguments, and evidence presented.

216. In which sampling method does every member of the population have an equal and independent chance of being selected?
(A) Simple random sampling
(B) Convenience sampling
(C) Purposive sampling
(D) (0) Quota sampling

217. Data that can be categorized and ordered, but for which the distance between intervals is not specified, is known as:
(A) Nominal data
(B) Interval data
(C) Ordinal data
(D) Ratio data

218. The normal probability curve is often referred to as the:
(A) Gaussian curve
(B) Skewed curve
(C) J-shaped curve
(D) U-shaped curve

219. Consider the following statements and select the correct option:
Statement I : The choice of a statistical test is independent of the level of measurement of the data.
Statement II : A chi-square test is appropriate for analyzing the relationship between two categorical variables.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

220. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : A well-structured research report is crucial for effective communication of research.
Reason (R) : It allows readers to systematically understand the rationale, methods, results, and implications of the study.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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more variables, known as independent variables, to determine their effect on an outcome, or dependent variable, while controlling for other extraneous factors. This controlled approach is the hallmark of experimental methodology.

Based on the above source, attempt the following five questions.

256. Which research method is described as being primarily concerned with answering questions about "what is"?
(A) Historical research.
(B) Descriptive research.
(C) Experimental research.
(D) Causal research.

257. According to the passage, what is the defining characteristic of experimental research?
(A) The reliance on primary and secondary sources from the past.
(B) The observation of variables in their natural, un-manipulated state.
(C) The accurate portrayal of a current situation or population.
(D) The deliberate manipulation of variables to establish causality.

258. A study aiming to reconstruct the evolution of coaching techniques in Indian hockey since the 1950s by examining old documents and interviews would be classified as:
(A) Historical research.
(B) Descriptive research.
(C) Experimental research.
(D) Observational research.

259. Based on the text, what is a key difference between descriptive and experimental research?
(A) Descriptive research uses variables, whereas experimental research does not.
(B) Descriptive research is systematic, whereas experimental research is not.
(C) Experimental research involves variable manipulation, whereas descriptive research does not.
(D) Experimental research studies the present, whereas descriptive research studies the past.

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260. The passage suggests that historical research serves to understand the present and anticipate future trends by:
(A) Systematically collecting and evaluating data related to past occurrences.
(B) Manipulating variables from the past in a controlled setting.
(C) Surveying current populations about their historical knowledge.
(D) Describing historical events without any form of interpretation or hypothesis testing.

Direction : Please read the following source carefully.

Experimental research designs are the specific procedures and blueprints used within experimental research to establish causality with the highest possible degree of confidence. The fundamental purpose of these designs is to structure the investigation in such a way that the effect of the independent variable on the dependent variable can be clearly isolated and measured. A critical function of an experimental design is to enable the researcher to control for threats to internal validity, which are alternative explanations for the observed outcomes. This control is achieved by carefully planning how subjects are selected and assigned to groups, and how and when the experimental manipulation and measurements are administered. For instance, a well-structured design helps rule out the influence of extraneous factors that could otherwise confound the results, ensuring that any change in the dependent variable is attributable to the independent variable and not some other unaccounted-for influence. The rigor of an experimental design is therefore directly related to its ability to minimize ambiguity in the interpretation of results. While various specific designs exist, they all share this common goal: to create a controlled environment where a hypothesis about a cause-and-effect relationship can be tested empirically and systematically, lending credibility and validity to the research conclusions.

Based on the above source, attempt the following five questions.

261. What is described as the fundamental purpose of experimental research designs?
(A) To describe a population as accurately as

(B) Plagiarism
(C) Data fabrication
(D) Statistical analysis

233. The process of testing a hypothesis primarily involves comparing:
(A) The research proposal with the research report.
(B) The findings of the current study with historical records.
(C) Sample data against expectations under a true null hypothesis.
(D) The researcher's opinion with the participants' opinions.

234. Match List I with List II and select the correct answer from the codes given below:
List I : (Data Type)
P. Nominal
Q. Ordinal
R. Interval
S. Ratio
List II : (Example)
1. Temperature in Fahrenheit
2. Jersey Number
3. Height in meters
4. Rank in a competition
(A) P-2, Q-4, R-1, S-3
(B) P-1, Q-2, R-3, S-4
(C) P-4, Q-3, R-2, S-1
(D) P-2, Q-1, R-4, S-3

235. Which of the following is an example of a research hypothesis (alternative hypothesis)?
(A) There will be no difference in agility between basketball players and soccer players.
(B) This study will investigate agility in athletes.
(C) Agility will be measured using the T-test.
(D) Basketball players will have significantly higher agility scores than soccer players.

236. The primary advantage of a structured observation with a checklist is its:
(A) Ability to capture unforeseen behaviors.
(B) High degree of objectivity and ease of data analysis.
(C) Flexibility and suitability for exploring complex social interactions.
(D) Ability to understand the 'why' behind behaviors.

237. A 'search engine' is a tool that:
(A) Analyzes statistical data.
(B) Is used for writing and formatting documents.
(C) Helps users find information on the World Wide Web.
(D) Is a database of peer-reviewed journals.

238. Consider the following statements and select the correct option:
Statement I : A sample is a subset of a population.
Statement II : A census involves collecting data from every member of a population.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

239. The properties of the normal probability curve are essential for understanding:
(A) The theory behind many parametric statistical tests.
(B) Historical research methods.
(C) How to formulate a research problem.
(D) The ethical conduct of research.

240. The Kruskal-Wallis H test is the non-parametric equivalent of which parametric test?
(A) Independent samples t-test
(B) One-way Analysis of Variance (ANOVA)
(C) Paired samples t-test
(D) Pearson Correlation

241. Which of the following is NOT a necessary component of a paper prepared for publication?
(A) Abstract
(B) Raw data spreadsheets for all participants
(C) Introduction
(D) Methods

242. Research in physical education is important because it:
(A) Provides an evidence-based foundation for practice.
(B) Replaces the need for practical coaching experience.
(C) Confirms all traditional beliefs as scientifically valid.
(D) Is a requirement only for obtaining a Ph.D. degree.

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243. The "Methodology" chapter of a research report should provide clear and detailed information so that the study can be:
(A) Criticized
(B) Disputed
(C) Replicated
(D) Ignored

244. Consider the following statements:
I. Descriptive research is aimed at what is happening.
II. Historical research is aimed at what has happened.
III. Experimental research aims to determine the cause of what is happening.
IV. Only experimental research is considered scientific.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I, II, and III only
(C) III and IV only
(D) I, II, III, and IV

245. "Critical reading" as part of a literature search means:
(A) Being negative about every article you read.
(B) Only reading the title and abstract of articles.
(C) Actively evaluating the information and arguments presented.
(D) Memorizing the content without understanding it.

246. In a non-probability sampling technique, the likelihood of any particular member of the population being selected is:
(A) Equal and known
(B) Unknown
(C) Unequal and known
(D) Always zero

247. The most fundamental level of data measurement, which involves placing data into categories without any order, is:
(A) Ordinal
(B) Interval
(C) Ratio
(D) Nominal

248. The standard deviation is a measure of:
(A) The spread or dispersion of data points around the mean.
(B) The central location of the data.
(C) The relationship between two different variables.
(D) The most frequently occurring score.

249. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
Assertion (A) : The use of statistical packages like SPSS has made data analysis more efficient.
Reason (R) : These software packages can perform complex calculations quickly and accurately, reducing the chance of human computational error.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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250. The ultimate goal of preparing a research report, abstract, and paper for publication or presentation is:
(A) To disseminate the knowledge gained from the research.
(B) To keep the research findings secret from the public.
(C) To fulfill a mandatory and basic course requirement.
(D) To demonstrate the superior writing skills of the author.

Direction : Please read the following source carefully.

Research in the field of physical education is indispensable for its evolution as a scientific discipline, serving to validate existing practices and innovate new methodologies. The importance of research lies in its capacity to generate a robust body of knowledge that informs pedagogy, enhances athletic performance, promotes health and wellness, and refines professional standards. Research can be broadly classified based on its purpose and methodology, encompassing approaches that describe phenomena, explore historical precedents, or establish causal relationships. However, the pursuit of knowledge is not without its constraints; it is governed by a stringent framework of ethical considerations.

Ethical issues in research are paramount to protect the dignity, rights, and welfare of participants. These issues involve obtaining informed consent, ensuring confidentiality and anonymity of data, avoiding harm, and maintaining scientific integrity through honest data reporting and attribution of sources. A failure to adhere to these ethical principles not only compromises the validity of the research but also damages public trust in the scientific enterprise, making the consideration of ethics a foundational and non-negotiable aspect of any research investigation in physical education. It is the researcher's primary responsibility to balance the quest for new knowledge with the moral imperative to protect human subjects.

Based on the above source, attempt the following five questions.

251. According to the passage, what is the primary justification for the importance of research in physical education?
(A) To meet the requirements of academic institutions.
(B) To generate a body of knowledge that improves practice and standards.
(C) To exclusively focus on enhancing the performance of elite athletes.
(D) To ensure all professionals are engaged in continuous publication.

252. The passage highlights that the pursuit of research knowledge is constrained by which of the following?
(A) A stringent framework of ethical considerations.
(B) The availability of funding.
(C) The complexity of statistical analysis.
(D) The limited number of available research classifications.

253. Which of the following is presented in the text as a key ethical issue in research?
(A) The challenge of finding a novel research topic.
(B) The requirement to publish findings only in high-impact journals.
(C) The process of obtaining informed consent from participants.
(D) The need to use the most advanced research equipment.

254. Based on the source, what is a potential consequence of failing to adhere to ethical principles in research?
(A) A guaranteed rejection of the research paper by publishers.
(B) An immediate increase in the cost of conducting the research.
(C) The mandatory re-classification of the research methodology.
(D) A compromise in research validity and a loss of public trust.

255. The passage implies that a researcher's fundamental duty involves balancing the search for new knowledge with what other obligation?
(A) The need for rapid dissemination of results.
(B) The personal ambition for professional recognition.
(C) The moral imperative to protect human participants.
(D) The financial profitability of the research outcomes.

Direction : Please read the following source carefully.

Research methods in physical education provide structured pathways for inquiry, with each method suited to different types of research questions. The three primary methods identified are descriptive, historical, and experimental. Descriptive research is fundamentally concerned with portraying an accurate profile of persons, events, or situations. It aims to answer questions about "what is" by observing and measuring variables as they exist naturally, without any manipulation by the researcher. This can involve surveys, observational studies, and case studies to document characteristics of a population or phenomenon. In contrast, historical research delves into the past to understand the present and anticipate future trends. It involves the systematic collection and critical evaluation of data related to past occurrences to reconstruct events and test hypotheses concerning their causes, effects, or trends. This method relies on primary and secondary sources to build a coherent narrative and interpretation of historical phenomena in physical education. Finally, experimental research stands apart as the method designed to investigate cause-and-effect relationships. It involves the deliberate manipulation of one or

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221. Which of the following would NOT be a focus of Historical Research in Physical Education?
(A) The evolution of rules in basketball.
(B) The influence of political ideologies on the Olympic Games.
(C) The immediate effect of a new supplement on muscle growth.
(D) The biography of a pioneering physical educator.

222. An experimental design that lacks a control group or randomization is typically called a:
(A) True-experimental design
(B) Quasi-experimental design
(C) Factorial design
(D) Pre-experimental design

223. What is the first step in formulating a research problem?
(A) Identifying a broad area of interest.
(B) Selecting a specific statistical test.
(C) Writing the final report.
(D) Collecting the data.

224. Consider the following statements regarding research tools:
I. Questionnaires are efficient for collecting data from large samples.
II. Interviews allow for deeper exploration of complex issues.
III. Observation can be influenced by the presence of the observer.
IV. Opinionnaires are used to measure factual information like height.
V. A questionnaire is a form of non-probability sampling.
Which of the above statement(s) is/are correct?
(A) I, II, V
(B) I, II, III
(C) III, IV, V
(D) II, IV, V

225. A key difference between probability and non-probability sampling is that:
(A) Non-probability sampling is more expensive.
(B) In probability sampling, the probability of selecting any member of the population is known.
(C) Probability sampling is only used in historical research.
(D) Non-probability sampling guarantees a representative sample.

226. Which of the following is an example of interval level data?
(A) Temperature in degrees Celsius
(B) Nationality
(C) Body weight in kg
(D) Finishing place in a race

227. In a perfectly normal distribution, what percentage of scores lies between the mean and +1 standard deviation?
(A) 50%
(B) 68.26%
(C) 34.13%
(D) 95.44%

228. Which of the following is a non-parametric test used to compare more than two independent groups?
(A) Mann-Whitney U test
(B) Wilcoxon signed-rank test
(C) Chi-square test
(D) Kruskal-Wallis H test

229. Which section of a research proposal justifies the need for the study?
(A) Methodology
(B) Budget
(C) Introduction/Rationale
(D) Appendix

230. Using "AND", "OR", and "NOT" to refine searches in a research database are examples of:
(A) Statistical commands
(B) Boolean operators
(C) SPSS syntax
(D) Referencing styles

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231. The classification of research into 'Descriptive', 'Historical', and 'Experimental' is based on the:
(A) Number of researchers involved.
(B) Source of funding.
(C) Geographical location of the research.
(D) Method or approach used to conduct the study.

232. An ethical issue arises when a researcher fails to inform participants that they are being observed. This relates to the principle of:
(A) Informed consent

possible.
(B) To explore historical precedents for current phenomena.
(C) To gather qualitative data through participant observation.
(D) To structure an investigation to isolate and measure causal effects.

262. According to the passage, a critical function of an experimental design is to control for what?
(A) The personal biases of the research participants.
(B) Threats to internal validity or alternative explanations for outcomes.
(C) The financial cost of the experiment.
(D) The external validity or generalizability of the findings.

263. The text suggests that the rigor of an experimental design is directly related to its ability to:
(A) Incorporate a large number of independent variables.
(B) Guarantee the publication of the research findings.
(C) Minimize ambiguity in the interpretation of results.
(D) Ensure the experiment can be completed quickly.

264. How does a well-structured experimental design help ensure the validity of a study's conclusions?
(A) By ensuring the results are statistically significant regardless of the data.
(B) By proving that the dependent variable is more important than the independent variable.
(C) By allowing researchers to ignore the need for a control group.
(D) By helping to rule out the influence of confounding extraneous factors.

265. The passage implies that all specific types of experimental designs share a common goal, which is to:
(A) Provide a controlled environment for systematic hypothesis testing.
(B) Create a naturalistic setting for observation.
(C) Focus exclusively on non-numerical, qualitative data.
(D) Eliminate the need for any statistical analysis.

Direction : Please read the following source carefully.

The initiation of a formal research inquiry begins with the identification and formulation of a research problem. This crucial first step involves pinpointing a gap in existing knowledge, a contradiction in current findings, or a practical issue that requires a solution within the domain of physical education. A well-formulated research problem is clear, specific, and manageable within the constraints of the study. Once the problem is defined, the researcher develops hypotheses, which are tentative, testable statements about the expected relationship between variables. The formulation of these hypotheses is a critical intellectual exercise that translates the research problem into a precise prediction. There are different types of research hypotheses, each serving a specific role in the scientific process. The formulation must be unambiguous, allowing for empirical verification. The entire process culminates in hypothesis testing, a formal procedure where statistical methods are used to evaluate the viability of the hypothesis against collected data. This testing does not prove a hypothesis to be absolutely true, but rather provides evidence to either support or reject it. Therefore, the sequence of problem formulation, hypothesis development, and subsequent testing forms the logical backbone of an empirical research study, guiding the entire investigation from its conceptual start to its evidence-based conclusion.

Based on the above source, attempt the following five questions.

266. What does the passage describe as the first step in initiating a formal research inquiry?
(A) The collection of data.
(B) The identification of a research problem.
(C) The formulation of a hypothesis.
(D) The selection of a statistical test.

267. A research hypothesis is defined in the text as:
(A) An established fact within the field of study.
(B) A tentative, testable statement about variable relationships.
(C) A conclusive answer to the research problem.
(D) A summary of the final research findings.

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Direction : Please read the following source carefully.

Data are the fundamental elements upon which research conclusions are built. They can be classified into different types, and their characteristics dictate the appropriate methods for collection and analysis. The measures used for collecting data must be both reliable and valid to ensure the quality of the research. Once collected, understanding the distribution of data is a key step in statistical analysis. A pivotal concept in this regard is the normal probability curve, a theoretical distribution that is symmetrical and bell-shaped. In this distribution, the majority of scores cluster around the center (the mean), with frequencies gradually decreasing towards the extremes. The normal curve serves as a model for many human characteristics studied in physical education, such as strength, endurance, or skill level. Its properties are foundational for many inferential statistical tests. A practical application derived from the principles of the normal distribution is the development of grading scales. For instance, norm-referenced grading scales can be created based on the assumption that abilities are normally distributed within a group. This allows for the categorization of performance into levels such as 'excellent', 'good', 'average', etc., based on an individual's position relative to the mean of the group, providing a standardized method for assessment and evaluation.

Based on the above source, attempt the following five questions.

281. What is the shape of the normal probability curve as described in the passage?
(A) Symmetrical and bell-shaped.
(B) Skewed and asymmetrical.
(C) Rectangular and uniform.
(D) Bimodal and irregular.

282. According to the text, where do the majority of scores lie in a normal distribution?
(A) Dispersed equally across all values.
(B) Clustered around the central mean.
(C) Concentrated at the two extreme ends.
(D) Randomly scattered with no discernible pattern.

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283. The passage provides an example of a practical application of the normal probability curve. What is it?
(A) The selection of a research topic.
(B) The development of grading scales.
(C) The formulation of a research hypothesis.
(D) The choice of a non-probability sampling method.

284. A norm-referenced grading scale, as implied by the text, categorizes performance based on:
(A) An individual's position relative to the group's mean.
(B) A fixed, absolute standard of mastery.
(C) The researcher's subjective judgment.
(D) The chronological age of the participant.

285. The passage states that the normal curve is a foundational concept for which of the following?
(A) All types of data collection measures.
(B) The ethical principles of research.
(C) Many inferential statistical tests.
(D) Historical research methodology.

Direction : Please read the following source carefully.

Once data are collected in a research study, they exist as raw, unorganized figures. Statistical processes are the critical procedures that transform this raw data into meaningful information. The importance of these processes cannot be overstated, as they provide the mechanism for objective analysis and interpretation, moving the research beyond mere data collection to actual knowledge generation. The uses of statistical processes in research are multifaceted. A primary use is descriptive, where statistics are employed to summarize and describe the main features of the data set, such as measures of central tendency (e.g., mean) and variability (e.g., standard deviation), thereby providing a clear profile of the sample. A second, and more advanced, use is for inferential purposes. Here, statistical processes are used to make inferences or generalizations about a population based on data from a sample. This involves testing hypotheses to determine if observed effects, relationships, or differences are statistically significant or likely to have occurred by chance. For example, statistics can be used to compare the effectiveness of two different training methods or to examine the relationship between

275. What is the primary purpose of critical reading during a literature search, as implied by the passage?
(A) To simply copy and paste information for the research paper.
(B) To find flaws in every previous study on the topic.
(C) To analyze, evaluate, and synthesize information to contextualize new research.
(D) To quickly skim sources to create a long bibliography.

Direction : Please read the following source carefully.

In most research scenarios in physical education, studying an entire population is impractical or impossible. Consequently, researchers employ sampling techniques to select a representative subset of the population. These techniques are broadly categorized into probability and non-probability sampling. The defining feature of probability sampling is that every individual in the target population has a known, non-zero probability of being included in the sample. This characteristic is crucial for minimizing selection bias and allowing the researcher to make statistical inferences from the sample to the broader population. Because it is based on the principles of randomization, probability sampling is considered the gold standard for achieving a representative sample, which is essential for the generalizability of research findings. Conversely, non-probability sampling does not afford every individual in the population an equal or known chance of being selected. The selection is typically based on the researcher's judgment, convenience, or other non-random criteria. While these methods can be useful for exploratory research, pilot studies, or when a specific, hard-to-reach group is targeted, they come with a significant limitation: the findings cannot be reliably generalized to the larger population due to the inherent risk of selection bias. The choice between these two overarching sampling strategies thus depends heavily on the research objectives and the need for population generalizability.

Based on the above source, attempt the following five questions.

276. What is the defining characteristic of probability sampling?
(A) Every individual has a known, non-zero chance of being selected.
(B) The selection of participants is based on the researcher's convenience.
(C) It is only used for small and easily accessible populations.
(D) It guarantees that the findings will be statistically significant.

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277. According to the passage, why is probability sampling considered the gold standard for achieving a representative sample?
(A) It is the fastest and least expensive method.
(B) It is based on the researcher's expert judgment.
(C) It ensures that every subgroup is equally represented.
(D) It is based on the principles of randomization, minimizing bias.

278. The passage states that a significant limitation of non-probability sampling is that:
(A) It requires complex statistical calculations.
(B) The findings cannot be reliably generalized to the population.
(C) It is more time-consuming than probability sampling.
(D) It can only be used to study historical events.

279. A researcher selecting students for a study simply because they are in their own class is an example of which type of sampling strategy?
(A) A strategy that ensures population generalizability.
(B) A probability-based strategy.
(C) A non-probability strategy based on convenience.
(D) A strategy where everyone in the school has an equal chance of selection.

280. The choice between probability and non-probability sampling techniques primarily depends on which factor?
(A) The statistical software available to the researcher.
(B) The preference of the journal where the research will be published.
(C) The number of researchers involved in the project.
(D) The research objectives and the need for generalizability.

268. What is the role of hypothesis testing as described in the source?
(A) To use statistical methods to evaluate the hypothesis against data.
(B) To prove a hypothesis with absolute certainty.
(C) To formulate the initial research problem.
(D) To provide a subjective opinion on the research topic.

269. According to the passage, a well-formulated research problem should be:
(A) Broad, theoretical, and universally applicable.
(B) Vague enough to allow for multiple interpretations.
(C) Clear, specific, and manageable.
(D) Based entirely on the researcher's personal opinion.

270. The passage suggests that the logical backbone of an empirical research study is formed by the sequence of:
(A) Data collection, analysis, and reporting.
(B) Literature review, peer review, and publication.
(C) Hypothesis testing, problem re-evaluation, and conclusion drawing.
(D) Problem formulation, hypothesis development, and hypothesis testing.

Direction : Please read the following source carefully.

Effective research relies on the systematic use of appropriate tools for data collection. Among these, questionnaires, opinionnaires, interviews, and observation are prominent. Questionnaires consist of a series of written questions for which participants provide answers, making them efficient for collecting data from a large sample. Opinionnaires are similar but are specifically designed to gather opinions or attitudes on a particular issue. Interviews involve direct, spoken interaction between the researcher and the participant, allowing for in-depth exploration of topics and clarification of responses. Observation involves systematically watching and recording behaviors or phenomena as they occur in a particular setting. Parallel to selecting data collection tools is the essential task of conducting a thorough literature search. This process begins with identifying key sources, which can be found in a library, through specialized research databases, or via the internet using search engines to access online journals. The steps of a literature search involve not just finding sources but also critically engaging with them. This engagement requires the development of skills in note-taking, which is the systematic recording of relevant information, and critical reading, which is the ability to analyze, evaluate, and synthesize the information presented in the literature to situate the new research within the existing body of knowledge.

Based on the above source, attempt the following five questions.

271. Which research tool is described as being specifically designed to gather opinions or attitudes?
(A) Questionnaires.
(B) Interviews.
(C) Opinionnaires.
(D) Observation.

272. The passage highlights that an interview allows for in-depth exploration of topics primarily because it involves:
(A) Written questions with fixed-choice answers.
(B) Direct, spoken interaction with the participant.
(C) Watching behaviors without any interaction.
(D) Collecting data from a very large sample simultaneously.

273. According to the text, what are the two essential skills required for critically engaging with literature?
(A) Internet searching and library access.
(B) Interviewing and observation.
(C) Formulating questions and opinions.
(D) Note-taking and critical reading.

274. The source mentions several places to conduct a literature search. Which of the following is NOT explicitly listed?
(A) Personal book collections.
(B) Research databases.
(C) Online journals via search engines.
(D) Library.

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physical activity levels and health outcomes. Ultimately, these processes lend empirical support and a level of confidence to the conclusions drawn by the researcher.

Based on the above source, attempt the following five questions.

286. According to the passage, what is the primary role of statistical processes?
(A) To collect raw data from participants.
(B) To formulate the initial research question.
(C) To select the appropriate research design.
(D) To transform raw data into meaningful information.

287. The passage identifies two main uses of statistical processes. What are they?
(A) Historical and experimental.
(B) Ethical and unethical.
(C) Descriptive and inferential.
(D) Theoretical and practical.

288. Using statistics to summarize the average fitness score of a sample group is an example of which use?
(A) Inferential use.
(B) Descriptive use.
(C) Hypothetical use.
(D) Formulative use.

289. What does the inferential use of statistics allow a researcher to do?
(A) To describe the sample without any generalization.
(B) To ensure that data collection is perfectly accurate.
(C) To create raw data from theoretical concepts.
(D) To make inferences about a population from a sample.

290. The passage suggests that hypothesis testing is part of the inferential use of statistics to determine if an observed effect is:
(A) Statistically significant or likely due to chance.
(B) Subjectively interesting to the researcher.
(C) Easy to explain to a lay audience.
(D) Consistent with previous historical findings.

Direction : Please read the following source carefully.

The application of statistical techniques is a pivotal stage in the analysis of research data. Researchers must choose between two broad categories of techniques: parametric and non-parametric. The decision to use one over the other is not arbitrary; it is dictated by the characteristics of the data. Parametric statistical techniques are generally considered more powerful, meaning they are more likely to detect a true effect or relationship if one exists. However, their use is contingent upon the data meeting a set of strict assumptions. A primary assumption is that the data are sampled from a population that follows a specific distribution, most commonly the normal distribution. Other assumptions often relate to the homogeneity of variance and the level of measurement of the data. In contrast, non-parametric statistical techniques are often referred to as "distribution-free" tests. They are applied when the assumptions required for parametric tests are not met. For example, they are used with data that are not normally distributed or with data that are ordinal (ranked) or nominal (categorical) in nature. While they are generally less powerful than their parametric counterparts, non-parametric techniques offer greater flexibility and are essential tools for analyzing the diverse types of data frequently encountered in physical education research.

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Based on the above source, attempt the following five questions.

291. The choice between parametric and non-parametric statistical techniques is primarily dictated by:
(A) The preference of the researcher.
(B) The software available for analysis.
(C) The characteristics of the data.
(D) The length of the research report.

292. What is a primary assumption for using parametric statistical techniques, according to the passage?
(A) The data must be from a population with a normal distribution.
(B) The data must come from a very large sample.
(C) The researcher must have at least five years of experience.
(D) The data must be categorical or ranked.

293. Why are non-parametric techniques referred to as "distribution-free"?
(A) Because they are given away for free by statistical software companies.
(B) Because they can be used without any data at all.
(C) Because their results are randomly distributed and unpredictable.
(D) Because they do not require the data to follow a specific distribution like the normal curve.

294. Under which of the following circumstances would a researcher most likely apply a non-parametric technique?
(A) When all the strict assumptions for a parametric test have been perfectly met.
(B) When the data are not normally distributed or are ranked.
(C) When the researcher wants to use the most powerful test available.
(D) When the sample size is extremely large and perfectly random.

295. The passage suggests that, compared to non-parametric techniques, parametric techniques are generally:
(A) Less powerful and less flexible.
(B) Easier to calculate by hand.
(C) More powerful but require stricter assumptions.
(D) Suitable for all types of data without exception.

Direction : Please read the following source carefully.

Modern research in physical education is heavily reliant on computer applications that streamline and enhance various stages of the research process. For the critical stage of data analysis, specialized statistical packages for data analyses, such as SPSS, are indispensable tools. These programs enable researchers to perform complex statistical computations efficiently and accurately, far surpassing the capabilities of manual calculation. Beyond analysis, a suite of other computer applications supports the entire research workflow. E-mail serves as a primary tool for communication with collaborators, participants, and mentors. Search engines are vital for navigating the vast expanse of the internet to conduct literature searches and locate online resources. Furthermore, standard office software, such as Microsoft Office, is essential for a range of tasks including word processing for writing reports and papers, and creating presentations. The culmination of the research effort is its dissemination, which takes several forms. A research proposal is a forward-looking document outlining the plan for a study. A research report is a comprehensive, detailed account of the completed study. An abstract provides a concise summary, while a paper for publication is meticulously crafted for peer-reviewed journals. Finally, a paper for presentation is designed for oral delivery at conferences, often supported by visual aids.

Based on the above source, attempt the following five questions.

296. What is the primary function of a statistical package like SPSS, as mentioned in the passage?
(A) To write the final research report.
(B) To create visual aids for presentations.
(C) To communicate with research collaborators via e-mail.
(D) To perform complex data analyses efficiently.

297. According to the text, which document is a forward-looking plan for a study?
(A) A research proposal.
(B) A research report.
(C) An abstract.
(D) A paper for publication.

298. The passage describes a paper for presentation as being specifically designed for what purpose?
(A) To be published in a peer-reviewed academic journal.
(B) To be delivered orally at a conference.
(C) To provide a comprehensive account of every detail of the study.
(D) To serve as a brief summary for a database.

299. Which of the following is NOT listed in the passage as a computer application used in research?
(A) E-mail.
(B) Video conferencing software.
(C) Microsoft Office.
(D) Search engines.

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300. What is the main difference between a research report and an abstract, based on the descriptions provided?

(A) The report is a comprehensive account, while the abstract is a concise summary.

(B) The report is for presentation, while the abstract is for publication.

(C) The report uses SPSS, while the abstract uses Microsoft Office.

(D) The report is written before the study, and the abstract is written after.

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to ensure that all segments of the population are proportionally represented. This method increases the precision of the results compared to non-probability techniques, which rely on convenience or judgment rather than random selection principles.

34. (A) Grading scale
A T-score is a type of standardized score used as a grading scale to compare individual performance against a group mean. By setting the mean at 50 and the standard deviation at 10, the T-score transforms raw data into a consistent format that is easy to interpret. This allows researchers and educators to understand where an individual stands relative to others, regardless of the original units of measurement.

35. (C) Synthesize information and identify key themes and academic arguments.
Note taking and critical reading are essential components of the literature search process, helping researchers to move beyond simple data collection. These activities allow for the synthesis of complex information and the identification of major themes and gaps in existing knowledge. By critically evaluating sources, a researcher can build a strong theoretical foundation for their study and ensure that their work contributes meaningfully to the academic discourse.

36. (A) P-3, Q-4, R-1, S-2
The mean is a measure of central tendency, while the standard deviation indicates the dispersion or spread of data points. Correlation is used to measure the strength and direction of the relationship between two variables. Finally, the t-test is a statistical procedure used to compare the means of two distinct groups. Understanding these terms is essential for accurately describing data and testing hypotheses within a research study.

37. (C) Nominal
Jersey numbers on football players represent nominal data because they are used solely for identification and categorization purposes. These numbers do not imply any mathematical value, rank, or measurable distance between players. In this level of measurement, the numbers act as labels rather than quantities, meaning they cannot be used for calculations like averages or sums. Nominal data is the most basic form of measurement used in research.

38. (B) Final and conclusive results of the study
A research proposal is a planning document created before a study begins, outlining the problem, the theoretical background, and the proposed methodology. It serves to secure approval and potentially funding for the project. Because the research has not yet been conducted, the proposal cannot include the final and conclusive results. Those findings are only presented in the final research report after data collection and analysis have been completed.

39. (B) II and III only
Observation is a valuable research tool but can be influenced by researcher bias or changes in participant behavior known as the Hawthorne effect. Interviews are highly effective for descriptive studies because they allow the researcher to probe and clarify responses for deeper insight. Conversely, questionnaires are typically better for broad data rather than qualitative depth, and opinionnaires measure subjective beliefs rather than factual metrics like height or weight.

40. (A) External validity (Generalizability)
External validity refers to the extent to which the findings of a research study can be generalized to other people, settings, and times beyond the specific sample tested. High external validity is achieved when the sample is truly representative of the larger population. This allows researchers to apply their conclusions broadly, ensuring that the results have practical significance and relevance for the entire community of athletes or students.

41. (C) PubMed
PubMed is a specialized research database that provides access to a vast collection of academic literature, particularly in the fields of medicine and sports science. Researchers use this tool to find peer-reviewed articles and clinical studies to support their own investigations. While Google is a general search engine and SPSS is statistical software, PubMed is a dedicated repository of scholarly knowledge, making it an essential resource for literature reviews.

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stage is critical because it defines the direction of the entire study, influencing the selection of the design, participants, and analytical tools. Without a clearly formulated problem, the subsequent steps of data collection and statistical analysis lack the necessary focus to produce meaningful results.

9. (A) Both A and R are true and R is the correct explanation of A.
Informed consent is a cornerstone of ethical research, requiring that participants are fully educated about the procedures and risks before agreeing to take part. This process directly protects the autonomy and safety of the individuals involved, ensuring they understand their right to withdraw at any time. Consequently, the reasoning perfectly explains why ethical guidelines mandate the acquisition of consent as a primary protective measure for subjects.

10. (A) Null hypothesis
A null hypothesis is a formal statement asserting that there is no significant relationship or difference between the variables being studied. Researchers use this type of hypothesis as a baseline for statistical testing, attempting to determine if observed differences are due to chance. In this context, stating that there is no difference in agility scores between two training groups exemplifies the standard format for a null hypothesis.

11. (D) Questionnaire
A questionnaire is a widely used research tool consisting of a series of written questions designed to gather data from respondents. This instrument allows researchers to collect a large amount of information efficiently from a wide audience regarding their habits, backgrounds, or knowledge. Because it provides standardized questions, it facilitates the objective comparison of responses across different participants, making it highly effective for descriptive studies.

12. (A) I and III only
Historical research in physical education is primarily focused on interpreting past events to understand the origins and evolution of various sporting disciplines. This methodology requires a rigorous and critical evaluation of sources to ensure the accuracy of the historical narrative. Unlike experimental methods, it does not rely exclusively on quantitative data, nor does it ignore the quality of evidence, making the interpretation and origins essential components.

13. (C) Make a decision about the viability of the null hypothesis using sample data.
The primary objective of hypothesis testing is to use collected sample data to determine whether the null hypothesis should be rejected or retained. This statistical process allows researchers to infer whether observed effects are likely real or simply the result of random variation. By evaluating the viability of the null hypothesis, scientists can make informed conclusions about the relationships between variables within the broader population.

14. (D) An eyewitness account of a specific sporting event.
Primary sources in historical research are original materials or evidence that were created during the time period being studied. An eyewitness account provides a direct, firsthand perspective on a sporting event, offering raw data that has not been interpreted or summarized by later authors. In contrast, textbooks and encyclopedias are secondary sources that compile and analyze information from primary records long after the events occurred.

15. (A) A questionnaire collects factual data while an opinionnaire gauges personal beliefs.
While both tools are used to gather information, a questionnaire is specifically designed to collect objective and factual data, such as demographic details or specific behaviors. An opinionnaire, however, focuses on capturing subjective viewpoints, attitudes, and personal beliefs regarding a particular topic. Distinguishing between these two is essential for researchers to ensure they are using the correct instrument to address their specific research questions.

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16. (A) P-2, Q-3, R-1, S-4
Experimental research is defined by the manipulation of variables, while historical research focuses on evaluating past records. Descriptive research typically involves surveying current practices to understand the present status of a phenomenon. Furthermore, informed consent is a critical ethical issue that ensures

50. (A) Organize, summarize, and interpret quantitative data objectively.
Statistical processes are essential in research because they provide an objective framework for organizing and interpreting large amounts of quantitative data. These techniques allow researchers to summarize their findings accurately and determine the likelihood that their results occurred by chance. While statistics cannot guarantee a hypothesis is correct, they offer a scientific basis for making informed decisions and communicating the significance of research findings to the broader academic community.

51. (C) Methodology
The methodology section of a research proposal provides a detailed, step-by-step description of how the study will be executed. It includes information about the participants, the tools used for data collection, and the specific procedures for analysis. This section is vital because it demonstrates the feasibility and rigor of the project. A clear methodology ensures that other researchers can understand the plan and eventually replicate the study to verify results.

52. (C) I, III, V
SPSS is a comprehensive and powerful statistical software package used extensively for analyzing quantitative data in research. It supports a wide range of both parametric and non-parametric tests, making it a versatile tool for researchers. Additionally, it helps in managing large data sets and generating professional tables and graphs to represent findings. It is distinct from word processors or search engines, focusing specifically on the computational and organizational aspects of data.

53. (C) Directional hypothesis
A directional hypothesis is a specific type of research statement that predicts the exact nature of the relationship or difference between variables. By stating that one group will perform better or score higher than another, the researcher indicates a clear expectation based on previous theory or evidence. This contrasts with a non-directional hypothesis, which simply predicts that a difference will exist without specifying which group will have the higher or lower outcome.

54. (B) Evaluating the specific strengths and weaknesses of a source.
Critical reading during a literature search involves an active and evaluative approach to existing research rather than passive acceptance. It requires the researcher to scrutinize the methodology, analyze the evidence, and identify the strengths and limitations of each study. This deep engagement helps in identifying gaps in the current body of knowledge and ensures that the researcher builds their own study on a foundation of high-quality, scientifically sound information.

55. (A) Both A and R are true and R is the correct explanation of A.
A clearly defined research problem is the essential foundation for any successful study because it dictates every subsequent step of the process. Without a focused problem, a researcher cannot logically choose a design, identify the right participants, or select the appropriate analytical techniques. Therefore, formulating a precise problem ensures that the research remains coherent and targeted, directly supporting the assertion that it is a mandatory prerequisite for scientific inquiry.

56. (A) A systematic collection and evaluation of data related to past occurrences.
Historical research is defined as the systematic process of gathering and critically analyzing evidence to understand and interpret events that have already occurred. This method relies on primary and secondary sources to reconstruct the past and provide insights into how previous developments influence the present state of physical education. Unlike experimental methods, it does not involve the manipulation of variables but focuses on the rigorous evaluation of historical records and artifacts.

57. (C) Ordinal data
Ordinal data is a level of measurement where categories can be ranked in a meaningful sequence, such as first, second, and third place in a race. While the order is clear, the intervals or distances between the ranks are not necessarily equal or measurable. This type of data provides more information than nominal categories but lacks the precision of interval or ratio data, where the numerical differences between points are consistent.

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population. When these assumptions are violated, such as when data is skewed or measured at a nominal level, non-parametric techniques serve as appropriate alternatives. Understanding both categories is essential for researchers to ensure that their statistical analysis is valid and suited to the specific characteristics of their data.

26. (A) Abstract
An abstract serves as a concise and comprehensive summary of an entire research study, typically appearing at the beginning of a report or article. It briefly outlines the purpose, methodology, key findings, and final conclusions, allowing readers to quickly grasp the essence of the work. This section is vital for researchers who need to determine the relevance of a study without reading the full technical report.

27. (D) Simple Random Sampling
Simple random sampling is a probability technique where every individual in the population has an equal and independent chance of being selected for the study. By assigning numbers to each person and using a random generator, the researcher eliminates bias and ensures that the sample is representative of the larger group. This method is fundamental for statistical inference, allowing findings from the sample to be generalized.

28. (C) I, II, III, V
A well-formulated research problem must be clear, unambiguous, and express a relationship between variables while being grounded in existing theory. Furthermore, it should be ethically neutral, ensuring that the investigation does not violate moral standards. While the problem must be manageable, it does not necessarily have to be solvable within a single week, as rigorous scientific inquiry often requires a significantly longer duration for thorough data collection.

29. (C) To aid in word processing, data tabulation, and presentations.
Microsoft Office provides a suite of versatile applications that are essential for various stages of the research process. Tools like Word are used for word processing and report writing, while Excel facilitates data tabulation and basic calculations. Additionally, PowerPoint is the standard software for creating visual aids for research presentations. These applications streamline the documentation and dissemination of findings, though they are not specialized statistical or database software.

30. (D) Anonymity
Anonymity is a strict ethical standard where the researcher ensures that no identifying information is collected, making it impossible to link responses to specific participants. This goes beyond confidentiality, where the researcher knows the identity but keeps it private. Anonymity provides the highest level of protection for subjects, encouraging honest participation by guaranteeing that their personal identities remain completely unknown to everyone involved in the project.

31. (A) Both A and R are true and R is the correct explanation of A.
The selection of a statistical test must be aligned with the specific research question and the level of measurement of the collected data. Parametric tests require interval or ratio data and specific distributional assumptions, which are not met by nominal data. Using an inappropriate test leads to invalid results and incorrect interpretations. Therefore, the requirement to match the technique to the data type is a fundamental principle of research.

32. (B) The manipulation of one variable to see its effect on another.
The defining feature of an experimental research design is the active manipulation of an independent variable to observe its impact on a dependent variable. This process allows researchers to establish cause-and-effect relationships by controlling for extraneous factors. Unlike descriptive or historical methods, experimental research involves a deliberate intervention, making it the most powerful approach for determining how specific changes or treatments influence performance and health outcomes.

33. (B) Stratified random sampling
Stratified random sampling is a probability technique where the population is divided into subgroups, or strata, based on specific characteristics like age or gender. Random samples are then drawn from each subgroup

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ANSWERS

1. (B) A systematic process of inquiry used to discover or revise facts and theories.
Research within the field of physical education is defined as a methodical and structured inquiry designed to uncover new information or modify existing theories. It involves a purposeful investigation that goes beyond casual data collection, ensuring that findings are based on evidence rather than tradition alone. This systematic process is vital for the academic growth of the discipline and for improving the practical application of sports.

2. (A) Historical Research
Historical research is a fundamental method used to examine and interpret occurrences from the past to provide a deeper understanding of the present. By analyzing various records, artifacts, and eyewitness accounts, researchers can trace the evolution of sports, training methods, and educational philosophies. This approach helps in identifying long-term trends and contextualizing current issues within the historical framework of physical education and athletics.

3. (C) It is crucial for developing new principles to improve performance and health.
Research plays a transformative role in physical education by establishing evidence-based principles that enhance athletic performance and public health outcomes. Rather than merely validating traditional beliefs, systematic inquiry leads to the discovery of innovative training techniques and injury prevention strategies. This ongoing process of exploration ensures that the field evolves according to scientific findings, providing coaches and educators with reliable tools to optimize physical health.

4. (D) Descriptive Research
Descriptive research is employed when a researcher intends to document and summarize the current characteristics or status of a specific group at a single point in time. By collecting data on variables such as fitness levels, body mass index, and endurance, the study provides a detailed snapshot of the population without manipulating any variables. This method is essential for identifying needs and establishing baseline profiles.

5. (C) Financial
In the academic study of physical education, research is traditionally classified into specific methods like descriptive, historical, and experimental. These categories define the approach taken to investigate problems, such as observing current trends, analyzing past events, or testing cause-and-effect relationships. Financial considerations, while important for conducting studies, do not represent a primary classification of research methodology, as they do not define the scientific inquiry process.

6. (B) Deception
Deception in research occurs when participants are intentionally misled about the true nature or purpose of a study to ensure their reactions remain natural and unbiased. While this technique can protect the integrity of the data, it raises significant ethical concerns regarding the autonomy of the subjects. Ethical guidelines typically require that any use of deception be justified and followed by a thorough debriefing for participants.

7. (A) Both Statement I and Statement II are true.
Descriptive research is designed to provide an accurate and systematic account of a population or phenomenon, focusing on answering what is happening in a specific situation. In contrast, experimental research designs are characterized by the active manipulation of independent variables to determine their impact on dependent variables. Both methodologies are essential components of scientific inquiry, serving different purposes in establishing descriptions and causal relationships.

8. (A) Identification and formulation of a research problem
The initial step in the research process involves narrowing down a broad area of interest into a specific and manageable research problem. This

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42. (A) Normal probability curve
The normal probability curve is a theoretical distribution that is perfectly symmetrical and bell-shaped, with the mean, median, and mode all coinciding at the center. It has specific properties where fixed percentages of scores fall within certain standard deviations from the mean. This curve is fundamental to statistics because many physical and psychological traits are naturally distributed this way, and many parametric tests rely on its mathematical properties.

43. (D) Analysis of Variance (ANOVA)
Analysis of Variance, or ANOVA, is a parametric statistical test used to compare the means of three or more groups to determine if significant differences exist. Like other parametric tests, it assumes that the data is normally distributed and possesses equal variance across groups. In contrast, tests like Chi-Square and Mann-Whitney U are non-parametric alternatives used when data is categorical or does not meet the assumptions of normality.

44. (A) Both Statement I and Statement II are true.
A research report provides a comprehensive and detailed account of the entire investigation, including every step taken and all findings discovered. When preparing a paper for publication, researchers typically condense this information into a more focused format that highlights the most significant aspects for the scientific community. Both documents are critical for documenting research, serving different purposes for academic record-keeping and the dissemination of new knowledge.

45. (C) The process of narrowing a broad topic into a specific researchable question.
The formulation of a research problem is the critical stage where a researcher narrows a wide area of interest into a clear, specific, and manageable question. This process involves defining the scope of the study and identifying exactly what is to be investigated. A well-formulated problem provides the necessary structure for the entire research project, guiding the selection of the methodology, participants, and the appropriate statistical techniques for analysis.

46. (D) Mann-Whitney U Test
The Mann-Whitney U test is a non-parametric procedure used to compare differences between two independent groups when the data does not meet the assumptions required for a parametric t-test. It is particularly useful for ordinal data or when the sample distribution is skewed. While ANOVA and t-tests rely on means and normal distributions, the Mann-Whitney U test uses rank order, making it a robust alternative for non-normal data sets.

47. (A) Pieces of information, facts, or statistics collected for reference or analysis.
Data refers to the raw information, facts, or numerical statistics that researchers collect during the course of a study to address their research questions. This information serves as the evidence upon which analysis is performed and conclusions are built. Data can be quantitative, such as fitness scores, or qualitative, such as interview transcripts. Understanding the nature of data is essential for selecting the correct tools for collection and interpretation.

48. (B) Non-participant and covert observation
In this scenario, the researcher is performing non-participant observation because they are watching the basketball players without joining the activity. It is also considered covert observation because the subjects are unaware that their behavior is being recorded. This approach is often used to capture natural behaviors that might be altered if the participants knew they were being studied, although it requires careful ethical consideration regarding privacy and consent.

49. (B) Q, S, P, R
This sequence correctly orders sampling techniques from probability-based methods to non-probability ones. Simple random sampling and cluster sampling are probability techniques where every member has a known chance of selection. In contrast, quota and convenience sampling are non-probability methods that rely on specific targets or ease of access. Understanding this spectrum is crucial for researchers to evaluate the representativeness and generalizability of their study findings to a larger population.

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participant protection. Matching these concepts correctly demonstrates a clear understanding of the unique features and ethical requirements associated with different types of research.

17. (B) Purposive Sampling
Non-probability sampling techniques, such as purposive sampling, involve selecting participants based on the researcher's judgment rather than random chance. In this method, the researcher chooses individuals who are considered typical or possess specific characteristics relevant to the study. This contrasts with probability methods like simple random or stratified sampling, where every member of the population has a known and equal opportunity of being included.

18. (A) Quasi-Experimental Design
A quasi-experimental design is utilized when a researcher intends to test cause-and-effect relationships but cannot randomly assign participants to different groups. This often occurs in real-world educational or athletic settings where pre-existing groups, such as specific teams or classes, must be used. Although the researcher manipulates the independent variable, the lack of full randomization distinguishes this design from true experiments while remaining more rigorous than pre-experiments.

19. (C) It is always stated in the form of a question.
A research hypothesis is a tentative and testable statement that predicts a relationship between two or more variables. It serves to guide the direction of the study and must be capable of being proven false through systematic testing. While the research process often begins with a question, the hypothesis itself is expressed as a declarative statement of expectation rather than as an interrogative sentence.

20. (D) Q, S, P, R
The research process typically begins with the formulation of a specific research problem, followed by a thorough literature review to understand existing knowledge. Once the study is planned, data collection is performed to gather the necessary evidence. Finally, statistical analysis is conducted to interpret the data and draw conclusions. This chronological sequence ensures that the study is logically organized and grounded in both theory and evidence.

21. (C) Independent variable
In an experimental study, the independent variable is the factor that the researcher actively manipulates or changes to observe its effects. In this scenario, the new diet is the intervention being tested to determine how it influences the weight of the wrestlers. The resulting change in weight is considered the dependent variable, as its outcome depends on the application and variation of the dietary intervention.

22. (B) It has equal intervals between values but lacks a true zero.
Interval data is characterized by having consistent and measurable distances between points on a scale, allowing for precise comparison of differences. However, this level of measurement does not possess a true or absolute zero point, meaning that a value of zero does not indicate a complete absence of the characteristic. A common example is temperature in Celsius, where zero degrees represents a specific point rather than no heat.

23. (D) To create primary data for analysis.
A literature search is conducted to identify existing knowledge, find gaps in research, and develop a solid theoretical framework for a study. It also prevents the unintentional duplication of previous work by showing what has already been investigated. However, a literature search involves analyzing secondary sources and does not involve the generation of new primary data, which instead occurs during the data collection phase of the study.

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24. (A) Normal probability curve
The Stanine scale is a specialized grading system that divides a distribution of scores into nine distinct categories. This scale is fundamentally based on the properties of the normal probability curve, with each stanine representing a specific width of the standard deviation. By utilizing the symmetry and predictable distribution of the normal curve, the Stanine system allows researchers to categorize and compare performance levels objectively.

25. (A) Both Statement I and Statement II are true.
Parametric statistical techniques are based on specific assumptions, most notably that the data follows a normal distribution within the

58. (A) It is skewed to the right.
The normal probability curve is characterized by being perfectly symmetrical and bell-shaped, meaning that it is not skewed in either direction. In this theoretical distribution, the mean, median, and mode all coincide at the peak of the curve. Because of its symmetry, the scores are evenly distributed on both sides of the center. A right-skewed distribution is a separate type of curve where scores are clustered toward the lower end.

59. (D) Analysis of Variance (ANOVA)
Analysis of Variance, or ANOVA, is the most appropriate statistical test for comparing the means of three or more independent groups. While a t-test is limited to comparing only two groups, ANOVA allows researchers to determine if significant differences exist among multiple categories, such as runners, swimmers, and cyclists. Using ANOVA avoids the increased risk of error associated with performing multiple t-tests, providing a more reliable analysis for studies involving several groups.

60. (B) P-3, Q-1, R-2, S-4
A research proposal serves as the initial plan for a study, while an abstract provides a brief summary of the completed work. The research report is the comprehensive and detailed document that records the entire project from start to finish. Finally, a paper for publication is a concise manuscript specifically formatted to share findings with the scientific community through journals. Understanding these different documents is essential for effective academic communication and project management.

61. (C) Historical Research - Predicting the future
Historical research is fundamentally concerned with the systematic study and interpretation of past events to understand how they shaped the present. While it can provide context that informs future decisions, its primary focus is retrospective rather than predictive. In contrast, descriptive research naturally uses surveys, experimental research requires the manipulation of variables, and plagiarism is a well-recognized ethical issue. Therefore, the pairing of historical research with predicting the future is incorrect.

62. (D) Index web pages and help users find information on the internet.
In the context of a literature search, a search engine is a powerful tool designed to index vast amounts of web content to help users locate specific information. It allows researchers to find academic papers, articles, and digital resources by using relevant keywords. While search engines facilitate the discovery of information, they do not perform statistical analysis or guarantee the credibility of sources, which remains the responsibility of the researcher to evaluate.

63. (B) I and II only
Probability sampling is a robust method where every member of a population has a known and non-zero chance of being selected, which supports strong statistical generalization. Non-probability sampling is frequently used in research due to its convenience and the speed at which data can be collected, although it is less representative. Simple random sampling is actually a form of probability sampling, and results from non-probability samples are generally less statistically robust.

64. (B) It can be time-consuming and is susceptible to interviewer bias.
The interview is a powerful qualitative tool, but it has significant limitations, including the substantial amount of time required to conduct and analyze each session. Furthermore, the results can be influenced by interviewer bias, where the researcher's tone or behavior unintentionally affects the participant's responses. These factors make it more challenging to manage than standardized questionnaires, although the depth of information gained often justifies the extra effort required during the data collection process.

65. (B) Stratified Random Sampling
Stratified random sampling involves dividing a heterogeneous population into smaller, more homogeneous subgroups called strata based on specific characteristics. The researcher then performs random sampling within each of these groups to ensure that every segment is adequately represented in the final sample. This technique is highly effective for reducing sampling error and provides a more precise reflection of the entire population than simple random sampling alone, especially when certain subgroups are small.

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statistical testing, researchers aim to gather evidence that supports the alternative hypothesis by rejecting the null hypothesis. This statement provides the positive direction for the study and reflects the researcher's theoretical expectations for the findings.

113. (A) P-4, Q-3, R-2, S-1
SPSS is primarily used for the quantitative analysis of data, while Microsoft Word is the standard tool for writing and formatting research reports. Search engines like Google Scholar are essential for locating relevant academic literature during the review phase. Additionally, e-mail serves as a critical communication channel for collaborating with co-authors and managing the research project. Matching these computer applications with their specific functions demonstrates an understanding of the technology required for modern scientific inquiry.

114. (A) Confidentiality
Confidentiality is the ethical practice of ensuring that any information collected from research participants remains private and is not disclosed to unauthorized individuals. While the researcher may know the identity of the participants, they take specific measures to protect their personal data in all reports and publications. This is a fundamental principle of research ethics that protects the privacy of individuals and fosters trust between the researchers and the subjects participating in the investigation.

115. (C) Experimental research
This study is a classic example of experimental research because the researcher is actively manipulating an independent variable, which is the type of training program. By randomly assigning participants to either the new or the traditional program, the researcher can control for individual differences and directly compare the outcomes. This methodology is designed to establish cause-and-effect relationships, providing evidence for which training protocol is more effective for improving performance in the target population.

116. (D) It should describe the participants, tools, and procedures in enough detail for replication.
The methods section of a research report is a technical description that provides all the necessary details required for another researcher to repeat the study. This includes specific information about the participants, the instruments used, and the exact steps taken during data collection and analysis. Transparency in this section is vital for the scientific process, as replication allows other scientists to verify the findings and ensure that the results are reliable and valid.

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117. (C) Standard Deviation
Measures of central tendency, such as the mean, median, and mode, are used to identify the typical or central score in a data set. These statistics help summarize large amounts of information into a single representative value. Standard deviation, however, is a measure of dispersion or variability, indicating how much the individual scores spread out from the mean. While both are essential for describing data, they provide different types of information about the distribution.

118. (C) A is true but R is false.
The normal probability curve is a theoretical mathematical model that provides a foundation for many statistical concepts and tests. While many real-world traits, such as height or strength, tend to follow this distribution, actual data sets rarely fit the curve perfectly in all situations. Variations in sample size and individual differences often lead to distributions that are slightly skewed or irregular. Therefore, the model remains an idealization rather than a perfect reflection of every real-world scenario.

119. (D) Historical
A study that examines the first modern Olympic Games by analyzing historical records, eyewitness accounts, and original documents is classified as historical research. This methodology focuses on interpreting and evaluating evidence from the past to understand how specific events have influenced the development of physical education and international sports. By using primary sources from that era, researchers can provide an accurate and detailed reconstruction of the events and their lasting impact on athletic history.

74. (A) Communication with collaborators, supervisors, and participants.
E-mail is a vital communication tool in the research process, enabling researchers to stay in constant contact with their team members, supervisors, and participants. It facilitates the coordination of data collection, the sharing of document drafts, and the distribution of instructions or surveys. While it does not perform statistical analysis or database searches, its role in managing professional relationships and administrative tasks is essential for the smooth and efficient operation of any research project.

75. (A) Both A and R are true and R is the correct explanation of A.
Non-parametric tests are often referred to as distribution-free tests because they do not rely on the assumption that the data follows a specific distribution, such as the normal curve. This makes them highly versatile for analyzing data that is skewed or measured at the nominal or ordinal level. The flexibility of these tests allows researchers to draw valid conclusions even when the strict mathematical requirements of parametric statistics cannot be met by the sample.

76. (B) The guarantee of a positive and significant result.
The identification of a research problem should be based on the researcher's expertise, the significance of the topic, and the practical availability of resources. True scientific inquiry is an open process where the outcome is not known in advance. Seeking a guarantee of a positive or significant result before starting the study is biased and unscientific. A researcher must remain objective, allowing the data to determine whether the findings are statistically significant or not.

77. (C) Longitudinal descriptive study
A longitudinal descriptive study involves the repeated observation and measurement of the same group of individuals over an extended period of time. This approach allows researchers to track changes, developments, and trends within the subjects as they age or progress. Unlike cross-sectional studies that provide a snapshot at one moment, longitudinal research offers a detailed view of how variables evolve, making it particularly useful for studying long-term training effects or human development.

78. (C) I, III, V
Ethical research is defined by protecting participant identity through confidentiality and ensuring that all work is properly credited to avoid plagiarism. Furthermore, researchers must always strive to maximize the benefits of their work while minimizing any potential harm to the participants. Informed consent is never optional for human subjects, and fabrication of data is always an unacceptable violation of scientific integrity. These core principles ensure the safety and trust of the research community.

79. (A) SPSS
SPSS is widely considered the standard statistical software package for data analysis in the social sciences and physical education research. It provides a user-friendly interface for performing a vast range of complex calculations, from descriptive statistics to advanced inferential tests. By automating the computational process, SPSS reduces the risk of human error and allows researchers to focus on interpreting the results and understanding the implications of their findings for the field.

80. (B) A testable prediction about the outcome of a study.
A hypothesis is a tentative and testable prediction regarding the relationship between variables or the expected outcome of a research study. It is not a proven fact but rather an educated guess based on existing theory and prior observations. The primary purpose of conducting research is to gather evidence that either supports or fails to support the hypothesis. This structured approach allows scientists to build a reliable body of knowledge through systematic verification.

81. (B) An in-depth interview
An in-depth interview is the most effective tool for exploring the subjective and personal experiences of an individual. Unlike structured questionnaires or checklists, the interview format allows for open-ended discussion and probing questions that uncover deep insights into a person's thoughts and feelings. This qualitative approach provides a rich and detailed understanding of the human perspective, which

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is essential for studying complex psychological and social aspects of training and performance in sports.

82. (A) Literature search phase
The literature search phase involves the systematic identification, collection, and critical evaluation of existing information related to a research topic. By taking detailed notes and reading sources critically, a researcher can understand what has already been discovered and where further investigation is needed. This process is essential for developing a strong theoretical framework and ensuring that the new study is grounded in the existing academic discourse found in journals and books.

83. (C) Incorrectly rejects a true null hypothesis.
A Type I error occurs in hypothesis testing when a researcher mistakenly rejects a null hypothesis that is actually true in the population. This is often referred to as a false positive, where the researcher concludes that a significant effect or relationship exists when it does not. The probability of making this error is determined by the alpha level, which is typically set at five percent in most physical education research studies.

84. (D) Normal Curve - Symmetrical distribution
The normal curve is fundamentally characterized as a symmetrical distribution where scores are evenly spread on both sides of the mean. This pairing is correct because symmetry is the defining geometric property of the theoretical normal distribution. In contrast, SPSS is a statistical package rather than a search engine, a null hypothesis is a statement of no difference, and probability sampling is distinct from convenience sampling, which is a non-probability method.

85. (C) Chi-square test
The Chi-square test is a prominent non-parametric statistical technique used to analyze relationships between categorical variables. Unlike parametric tests such as the t-test or ANOVA, it does not require the assumption of a normal distribution or interval-level data. This makes it ideal for examining frequencies and associations, such as whether there is a link between gender and sport preference. Its flexibility for nominal data makes it a valuable tool in many research scenarios.

86. (B) P-4, Q-1, R-3, S-2
Simple random sampling provides every individual with an equal chance of selection, while systematic sampling involves choosing every nth person from a list. Purposive sampling is a non-probability method where researchers select participants they deem typical or relevant to the study. Finally, convenience sampling relies on the easy availability of subjects. Correctly identifying these techniques is essential for researchers to understand the strengths and limitations of their study's sample and its potential for generalization.

87. (D) Astrological
Core methods of research in physical education include descriptive, historical, and experimental approaches, which are grounded in scientific inquiry and logical reasoning. These methods provide structured ways to observe, analyze, and test phenomena. Astrology, on the other hand, is considered a pseudoscience and is not a valid or recognized method for conducting academic research. Scientific progress relies on evidence-based methodologies that are objective, reliable, and capable of being verified through systematic data collection.

88. (A) Establish a body of knowledge to guide practice and policy.
The fundamental importance of research in physical education lies in its ability to establish a reliable body of knowledge that informs professional practice and public policy. By conducting systematic investigations, researchers can identify the most effective training methods, educational strategies, and health interventions. This evidence-based approach ensures that the field progresses according to scientific facts rather than tradition alone, ultimately leading to improved outcomes for athletes, students, and the general population.

89. (A) Both Statement I and Statement II are true.
A research proposal is a planning document that outlines the proposed study before any data is collected or analyzed. It serves as a blueprint for the project and is often used to seek approval or funding. Conversely, a research report is written after the study is finished, providing a detailed account of what was actually done and what the

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findings were. Both documents are critical stages in the lifecycle of a research project.

90. (A) Chi-square test
The Chi-square test is the most appropriate statistical technique for determining if there is a significant association between two categorical variables, such as gender and sport preference. Since both variables are measured at the nominal level, a parametric test like a t-test or ANOVA would be inappropriate. The Chi-square test evaluates whether the observed frequencies in each category differ significantly from what would be expected by chance, providing a clear answer to the research question.

91. (D) Recording bibliographic details and summarizing findings personally.
Note taking during a literature review should be a purposeful activity focused on recording essential bibliographic details and personally summarizing key findings. This approach ensures that the researcher understands the material and can cite it accurately in their own work. Simply copying text verbatim or only selecting biased information undermines the integrity of the review. Personalized summaries help in synthesizing information and identifying the most relevant arguments for the current research project.

92. (B) To establish cause-and-effect relationships between variables.
The primary purpose of an experimental design is to establish whether a cause-and-effect relationship exists between an independent variable and a dependent variable. By actively manipulating the treatment and controlling for extraneous factors, researchers can determine if the intervention directly produced the observed change. This high level of control makes experimental research the most rigorous method for testing the effectiveness of new training programs, dietary interventions, or coaching techniques in physical education.

93. (C) Valid
Validity refers to the extent to which a test or research instrument actually measures what it is intended to measure. A valid tool provides accurate results that truly reflect the characteristic or phenomenon under investigation. While reliability focuses on the consistency of the results over time, validity ensures the relevance and truthfulness of the data. Ensuring high validity is critical for researchers to draw meaningful conclusions and make appropriate applications based on their findings.

94. (D) Primary data
Data collected directly from participants through tools such as questionnaires, interviews, or opinionnaires is considered primary data. This information is gathered specifically for the purpose of the current study and provides firsthand evidence to address the research questions. In contrast, secondary data refers to information that was previously collected by others for different purposes. Utilizing primary data allows researchers to have full control over the data collection process and its alignment with their goals.

95. (A) All located at the center of the distribution.
In a perfectly normal distribution, which is represented by a symmetrical bell-shaped curve, the mean, median, and mode are all equal and located at the exact center. This central point represents the highest frequency of scores, with other values trailing off equally in both directions. The alignment of these three measures of central tendency is a fundamental property of the normal curve, facilitating the use of various parametric statistical techniques in research.

96. (B) Participants must be fully informed about the potential risks and benefits.
An essential ethical requirement for research involving human subjects is that participants must be fully informed about all aspects of the study, including any potential risks and benefits. This ensures that individuals can provide voluntary and informed consent before taking part. Protecting the welfare and autonomy of participants is a primary responsibility of the researcher. Transparency regarding the study's purpose and procedures is fundamental to maintaining the integrity and trust of the scientific community.

97. (A) Both A and R are true and R is the correct explanation of A.
Selecting an appropriate sample is a critical step because the validity of the research conclusions

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128. (B) To manage data and perform statistical calculations.
The primary function of a statistical package like SPSS is to help researchers efficiently manage large data sets and perform a wide range of complex statistical calculations. It allows for both descriptive summaries and advanced inferential testing to address research questions. While other software may be used for writing or searching literature, SPSS is specifically designed for the organizational and computational tasks required to analyze quantitative data and produce meaningful results in scientific research.

129. (B) Creating visual aids (e.g., PowerPoint slides).
Preparing a paper for presentation involves synthesizing the core findings of a study to communicate them effectively to a professional audience. This process requires summarizing key results and rehearsing the delivery to stay within the allotted time. Creating visual aids, such as PowerPoint slides, is a fundamental part of this preparation, as it helps to illustrate the data and keep the audience engaged. Presenters typically share a condensed version rather than the full, unabridged technical report.

130. (A) Directional research hypothesis
A statement predicting a specific type of relationship, such as a positive correlation between flexibility and performance, is an example of a directional research hypothesis. It clearly indicates the researcher's expectation of the outcome based on previous knowledge or theory. Unlike a non-directional hypothesis, which simply states that a relationship exists, a directional hypothesis specifies whether the variables will increase or decrease together, providing a focused prediction that can be tested through systematic research and analysis.

131. (C) Research should aim to maximize benefits and minimize harms.
The ethical principle of beneficence requires researchers to prioritize the welfare of their participants by maximizing potential benefits and minimizing any possible risks or harms. This principle ensures that the research is conducted with a focus on doing good and protecting individuals from unnecessary distress or injury. It is a cornerstone of research ethics that must be considered at every stage of a study, from the initial design to the final reporting of results.

132. (D) Establishing what is.
Descriptive research is primarily concerned with establishing and documenting the current status of a phenomenon, answering the question of what is happening in the present moment. This method involves observing and describing variables as they naturally occur, without any intervention or manipulation. By providing an accurate account of the present state of affairs, descriptive research provides the baseline information necessary for identifying needs and developing future interventions in physical education and sports.

133. (A) I, II, III
Descriptive, historical, and experimental research are three primary methods used in physical education, each serving a unique purpose. Descriptive research documents the present, historical research analyzes the past, and experimental research investigates cause-and-effect relationships. All three methods are valid and scientific approaches to inquiry. Historical research does not rely solely on numerical data, as it often involves qualitative analysis of artifacts and records, and multiple methods are essential for building a comprehensive understanding of the field.

134. (B) Reviewing existing literature on a broad topic.
Reviewing the existing literature is a key step in formulating a research problem because it helps the researcher understand what is already known and where gaps exist. This process allows a broad area of interest to be narrowed down into a specific, researchable question that can be addressed through systematic investigation. By identifying the limitations of previous studies, the researcher can ensure that their own project contributes something new and valuable to the scientific community.

135. (D) It does not allow for probing or clarification of ambiguous answers.
A significant disadvantage of using a questionnaire is that the researcher cannot ask follow-up questions to clarify ambiguous or incomplete responses from participants. Because it is a standardized and often self-administered

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105. (C) Statement I is true, but Statement II is false.
The introduction section of a research report is designed to provide the necessary context and clearly state the specific problem being investigated. In contrast, the discussion section should not merely repeat the results; its primary purpose is to interpret those findings, relate them to existing literature, and explain their broader significance. Therefore, while the first statement accurately describes the function of the introduction, the second statement incorrectly characterizes the active interpretive role of the discussion.

106. (A) An extraneous or confounding variable
In an experimental study, an extraneous or confounding variable is any factor other than the independent variable that could potentially influence the results. These variables can contaminate the findings and make it difficult to determine the true cause-and-effect relationship. Researchers must identify and control for these factors through proper design and statistical techniques. Minimizing the impact of extraneous variables is essential for maintaining internal validity and ensuring that the conclusions of the study are accurate.

107. (D) Systematic sampling
Systematic sampling is a type of probability sampling where participants are selected from a list using a predetermined interval, such as every tenth person. Because the starting point is random and the interval is fixed, every individual has a known chance of being included. In contrast, quota, purposive, and snowball sampling are non-probability techniques that rely on the researcher's judgment or specific targets rather than random chance, limiting their ability to represent the entire population.

108. (B) R, Q, P, S
The logical sequence for preparing a paper for publication begins with selecting a target journal that matches the research topic. Next, the researcher drafts the manuscript according to that journal's specific formatting and style guidelines. Once ready, the manuscript is submitted for review. Finally, the author must respond to any comments provided by peer reviewers during the evaluation process. This structured approach ensures that the submission is professional and tailored to the chosen academic outlet.

109. (C) The data should meet certain assumptions, such as normal distribution and homogeneity of variance.
Parametric statistical techniques are powerful tools that require data to meet specific mathematical assumptions to produce valid results. These include the requirement that the data follows a normal distribution and that the variance is equal across different groups. These tests are generally used with interval or ratio-level data. When these assumptions are met, parametric tests provide more sensitivity and power for detecting relationships or differences than non-parametric alternatives, making them highly desirable for rigorous analysis.

110. (D) It is the final step in the research process.
A literature search is an essential early step in the research process, occurring well before data collection or final reporting. It helps researchers identify existing knowledge, refine their questions, and select appropriate methodologies based on previous studies. While the review may be updated throughout the project, its primary role is to provide a foundation for the study. The final step is typically the preparation and dissemination of the research report or paper for publication.

111. (A) Descriptive Research (Survey)
Descriptive research, particularly through the use of surveys, is the most appropriate method for determining the current status or habits of a population, such as average screen time. This approach allows researchers to collect data from a large sample and summarize the findings to provide an accurate description of the situation. Unlike experimental research, it does not involve any intervention, and unlike historical research, it focuses on what is happening in the present moment.

112. (B) Alternative hypothesis (H1)
The research hypothesis, also known as the alternative hypothesis, is the statement of the researcher's actual prediction regarding the outcome of a study. It typically suggests that a significant relationship or difference exists between the variables being investigated. In

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66. (A) Control group
In an experimental research design, the control group is the group of participants who do not receive the experimental treatment or intervention. By comparing the outcomes of the experimental group with those of the control group, researchers can determine if the independent variable truly caused a change. This comparison is essential for establishing internal validity, as it helps to rule out alternative explanations for the results observed in the participants receiving the treatment.

67. (C) Reaction time in milliseconds
Ratio-level data is the most informative level of measurement because it possesses equal intervals between values and an absolute zero point. Reaction time measured in milliseconds is a perfect example, as zero indicates a complete absence of time, and a value of 200 is mathematically twice as much as 100. In contrast, finishing positions are ordinal, Celsius temperature is interval, and gender is nominal, as they lack one or both of these critical properties.

68. (A) Both Statement I and Statement II are true.
An opinionnaire is a specific type of research instrument designed to measure subjective attitudes, beliefs, and viewpoints regarding various topics. In contrast, a questionnaire is typically used to collect objective and factual data, such as demographic information and specific behaviors. Both tools are essential for different types of descriptive research, and understanding their distinct functions allows a researcher to select the most appropriate method for their specific data collection needs.

69. (C) Disseminate key findings concisely to an academic audience.
A paper for presentation at a conference is designed to share the most significant results and conclusions of a study with professional colleagues. Unlike a full research report, it is condensed to fit within a specific time limit, focusing on the core findings that are of greatest interest to the audience. This format encourages academic discussion, feedback, and the rapid dissemination of new knowledge within the scientific community, fostering collaboration among researchers.

70. (B) Research problem formulated as a question
A research problem is often initially expressed as a question that identifies the relationship between two or more variables being studied. In this example, the researcher is asking how sleep duration influences athletic performance, which provides a clear focus for the entire investigation. This question serves as the starting point for developing a hypothesis and selecting the appropriate methodology and participants needed to find a scientifically sound answer to the inquiry.

71. (D) Plagiarism
Plagiarism is a major ethical violation in research that occurs when an individual uses the work, ideas, or words of another person without providing proper credit or citation. This practice undermines the integrity of academic discourse and violates the rights of the original authors. Ethical research requires transparency and honesty, meaning that all sources must be clearly acknowledged to avoid the misrepresentation of someone else's intellectual property as one's own.

72. (A) Approximately 68%
The normal probability curve has specific mathematical properties that describe how scores are distributed around the mean. In a perfectly normal distribution, approximately 68 percent of all cases fall within one standard deviation above and below the mean. This predictability is fundamental to many statistical tests, as it allows researchers to understand the probability of obtaining certain scores and to identify which values are considered common or extreme within a population.

73. (C) Q, S, P, R
A standard research paper for publication follows a logical structure starting with the introduction to set the context and state the problem. This is followed by the methods section, which describes how the study was conducted. The results section then presents the raw findings and data. Finally, the discussion section interprets those results, addresses limitations, and draws conclusions. This chronological order allows readers to follow the researcher's reasoning and evidence systematically.

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120. (A) It must be researchable, meaning data can be collected to address it.
A defining characteristic of a good research problem is that it must be researchable, meaning it is possible to collect and analyze data to find an answer. Questions that are purely philosophical or based on untestable opinions do not fall within the realm of scientific research. A researchable problem must be clearly defined and manageable within the available resources, providing a structured path for the researcher to follow during the investigation and analysis phases.

121. (D) I, II, III, and IV
Data is classified into four levels of measurement, each providing increasing amounts of information. Nominal data is purely categorical, while ordinal data introduces a meaningful rank order. Interval data adds equal distances between values, but lacks a true zero. Finally, ratio data possesses all these features plus an absolute zero point, allowing for complex mathematical comparisons. Understanding all these levels is essential for researchers to select the most appropriate statistical tests for their data sets.

122. (A) Semi-structured interviews.
Semi-structured interviews are the most effective research tool for exploring the complex and lived experiences of individuals, such as elite gymnasts. This approach combines a consistent set of core questions with the flexibility to probe deeper into personal stories and emotions. Unlike structured fitness tests or simple questionnaires, interviews provide rich, qualitative data that captures the unique perspectives of the participants, offering a comprehensive understanding of their experiences within the sport.

123. (D) Literature search
The availability of online journals and specialized research databases has revolutionized the literature search phase of the research process. These digital tools allow researchers to quickly locate and access thousands of peer-reviewed articles and studies from around the world. This convenience has made it much easier to identify what is already known about a topic and to build a strong theoretical foundation for new studies, significantly improving the efficiency and depth of scientific inquiry.

124. (B) Reliability
Reliability refers to the consistency and stability of a test or measurement over time. When a test is administered to the same group on two separate occasions and produces highly similar results, it is considered to have high reliability. This ensures that the scores are not due to random error and can be trusted for research and assessment purposes. Maintaining reliability is essential for researchers to ensure that any observed changes are truly due to the intervention being studied.

125. (C) Purposive (Judgmental) Sampling
Purposive sampling, also known as judgmental sampling, is a non-probability technique where the researcher uses their own expertise to select participants who are most relevant or typical for the study. Instead of relying on random chance, individuals are chosen based on specific characteristics that align with the research objectives. While this method is useful for in-depth qualitative studies, it lacks the representativeness and generalizability of probability sampling methods like simple random or stratified sampling.

126. (C) Statement I is true, but Statement II is false.
Hypothesis testing is a critical statistical process that allows researchers to make informed inferences about a large population based on data collected from a smaller sample. However, the decision to reject the null hypothesis is typically made when the p-value is less than the predetermined alpha level, such as 0.05. A p-value greater than alpha suggests that the observed results are likely due to chance, leading the researcher to fail to reject the null hypothesis.

127. (A) Normal probability curve
The Hull scale is a specialized 10-point grading system used in physical education to evaluate performance. Like the Stanine and T-score scales, it is fundamentally derived from the mathematical properties of the normal probability curve. By using the mean and standard deviation of a distribution, the Hull scale allows raw scores to be transformed into a standardized format. This ensures that grading is objective and reflects where an individual stands relative to the overall distribution of scores.

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depends on how well the sample represents the entire population. If the sample is representative, the findings can be accurately generalized to the larger group. Conversely, a biased or non-representative sample limits the applicability of the results. Therefore, the goal of achieving generalizability directly explains why careful sample selection is a foundational requirement for rigorous and meaningful research studies.

98. (A) Historical Research
Studying training logs and records from the past to understand the methods used by an athlete in a previous era is a classic example of historical research. This methodology focuses on interpreting documented evidence and artifacts to reconstruct and analyze events that have already occurred. By examining these primary sources, researchers can gain valuable insights into the evolution of training philosophies and their long-term impact on the field of physical education and competitive sports.

99. (C) The effect of high-intensity interval training on the resting heart rate of collegiate soccer players.
A well-stated research problem clearly identifies the relationship between specific variables and defines the target population. In this example, the researcher is investigating the impact of a specific training method on a physiological outcome in a defined group of athletes. This formulation is focused and researchable, providing the necessary direction for selecting a methodology and collecting data. Broad statements or general facts do not provide the specific guidance required for a study.

100. (B) I, II, and III only
A methodologically sound research study must include a testable hypothesis, a well-chosen research design, and the application of appropriate statistical analysis to interpret the data. These components ensure that the study is systematic, rigorous, and capable of producing reliable conclusions. Ethical principles are also mandatory for any scientific investigation involving human subjects. Therefore, disregarding ethical standards is never acceptable and would invalidate the integrity and professional standing of the entire research project.

101. (C) Grading scale
A Z-score is a type of standardized score used as a grading scale to identify an individual's position relative to the mean in terms of standard deviation units. By setting the mean at zero and the standard deviation at one, the Z-score provides a universal way to compare performance across different tests and populations. This transformation allows researchers to interpret raw scores consistently, regardless of the original units of measurement or the group's size.

102. (B) To obtain approval and funding for a planned research project.
The primary purpose of a research proposal is to provide a detailed plan that justifies the importance of a study to obtain necessary approval and funding. It serves to convince reviewers or sponsors that the research is well-grounded in theory, feasible in its methodology, and significant for the field. While it is a precursor to the final report, its goal is to secure the resources and permission needed to begin the investigation.

103. (D) Observation - To directly witness and record behaviors as they occur.
Observation is a research tool characterized by the systematic witnessing and recording of behaviors or events in their natural setting. This method allows researchers to gather data on what people actually do, rather than what they say they do. Unlike questionnaires or interviews that rely on self-reporting, observation provides a direct and objective account of the phenomenon being studied. Correctly pairing this tool with its function is essential for ensuring accurate data collection.

104. (A) Stratified Random Sampling
Stratified random sampling is used when a researcher divides a heterogeneous population into distinct subgroups, such as university faculties, and then selects a random sample from each group. This technique ensures that every segment of the population is proportionally represented, which increases the precision and reliability of the research findings. By accounting for important characteristics within the sample, researchers can make more accurate generalizations about the entire population than would be possible with simple random selection.

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tool, the data collected is limited to the exact answers provided by the respondents. This can lead to less depth and understanding compared to an interview, where the researcher can probe for more detail and ensure that the questions are being interpreted correctly.

136. (A) Both A and R are true and R is the correct explanation of A.
Interviews are a powerful qualitative research tool because they allow for direct interaction between the researcher and the participant. This format provides the opportunity to ask follow-up questions and probe for deeper meaning, which results in rich and detailed information that a standardized questionnaire might miss. Therefore, the ability to engage in a conversation and clarify responses directly explains why interviews are often more effective for capturing the depth and complexity of individual human experiences.

137. (C) Using specific keywords and Boolean operators like AND.
The most effective strategy for searching an online research database is to use specific keywords combined with Boolean operators like AND, OR, and NOT. These operators allow researchers to refine their search by either narrowing the results to include multiple terms or broadening them to include synonyms. This targeted approach is much more efficient than using broad general terms or natural language questions, ensuring that the results are highly relevant to the researcher's specific topic.

138. (A) Sampling bias
Sampling bias occurs when the individuals selected for a study do not accurately represent the characteristics of the larger population. This happens when the sampling method used favors certain groups over others, leading to results that are not generalizable. When a sample is biased, the findings of the study may be misleading and fail to reflect the true situation in the entire population. Ensuring a representative sample is essential for maintaining the validity and utility of research findings.

139. (D) Hypothetical
Data in research is categorized into specific levels of measurement based on its properties: nominal, ordinal, interval, and ratio. These levels define how the information is collected and analyzed. Hypothetical data, however, is not a recognized type of actual research data; it refers to imagined or assumed information used for theoretical discussion rather than evidence gathered from participants. Scientific research must be based on real, empirical data that has been systematically collected from the field or laboratory.

140. (B) P-3, Q-1, R-4, S-2
Parametric tests like the t-test are based on normal distributions, which are symmetrical and represented by a normal curve. In contrast, the Mann-Whitney U test is a non-parametric alternative used when assumptions are not met. Furthermore, standardized scores like the T-score function as grading scales to help interpret individual performance. Understanding these pairings is essential for researchers to correctly apply statistical methods and accurately describe their findings within the context of physical education and sports science.

141. (C) Provide an objective basis for drawing conclusions from data.
Statistics play a vital role in research by providing an objective and mathematical framework for interpreting collected data. These techniques allow researchers to move beyond subjective impressions and determine whether their findings are statistically significant or likely due to chance. By providing a scientific basis for drawing conclusions, statistics ensure that the research results are credible and can be reliably communicated to others. This objective analysis is essential for advancing knowledge in physical education and beyond.

142. (D) The assumptions for a parametric test are violated, or the data is ordinal/nominal.
Non-parametric statistical tests are typically used when the strict assumptions required for parametric tests, such as normal distribution and interval-level data, cannot be met. This frequently occurs when working with small samples, skewed distributions, or data that is measured at the nominal or ordinal level. Non-parametric techniques provide a robust alternative, allowing researchers to draw valid conclusions from their data even when it does not follow the standard

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patterns required for more sensitive parametric analysis.

143. (A) Word and Access (or just Word for writing)
Microsoft Word is the standard application for word processing and is essential for writing the final research report, including the formatting of text and citations. Microsoft Access can be used as a database management tool to store and organize large amounts of information, such as records of research articles. Together, these applications help researchers systematically manage their sources and document their findings, although specialized reference management software is also frequently used for these specific research tasks.

144. (B) Be a concise summary of the study's purpose, methods, and final conclusions.
An abstract is a brief and self-contained summary that highlights the most important aspects of a completed research study. It must accurately reflect the purpose of the investigation, the methodology used, and the primary findings and conclusions. By providing this condensed overview, the abstract allows other researchers to quickly assess the relevance of the study to their own work. It is a critical component of research reports and journal articles, facilitating the efficient dissemination of scientific knowledge.

145. (C) Statement I is true, but Statement II is false.
Historical research provides valuable context by analyzing past events, which can help professionals avoid repeating previous mistakes in training and education. However, primary sources in historical research are not always completely objective; they can be influenced by the personal biases and perspectives of the individuals who created them. Therefore, while the first statement highlights a key benefit of the historical method, the second statement incorrectly assumes that all primary evidence is free from the influence of its creator.

146. (A) No effect, no difference, or no relationship.
A null hypothesis is a formal statement asserting that there is no significant effect, difference, or relationship between the variables being studied. It serves as a starting point for statistical testing, with researchers typically attempting to gather enough evidence to reject it. By assuming that any observed differences are due to random chance, the null hypothesis provides a baseline that allows for the objective evaluation of experimental results and the determination of scientific significance.

147. (C) Participant observation
In this scenario, the researcher is performing participant observation by joining the marathon running club and interacting with its members while collecting data. This approach allows the researcher to gain an insider's perspective on the culture and behaviors of the group, which might not be accessible through other methods. By being part of the environment, the researcher can observe natural interactions and develop a deeper understanding of the subjective experiences and social dynamics within the athletic community.

148. (D) A synthesis and critical analysis of previous research.
A literature review is a critical component of a research study that involves synthesizing and analyzing previous research related to the topic. It is not just a list of summaries but a coherent argument that shows how the current study fits into the existing body of knowledge. By identifying what is already known and where gaps exist, the literature review justifies the need for the new investigation and provides a strong theoretical foundation for its methodology and findings.

149. (C) Convenience Sampling
Selecting participants based on who is easily accessible and willing to take part, such as the first 50 people the researcher meets, is an example of convenience sampling. This non-probability method is often used due to its speed and low cost, making it popular for preliminary or exploratory studies. However, because the sample is not selected randomly, it may not be representative of the larger population, which limits the researcher's ability to generalize the results to other groups.

150. (B) Google Scholar
Google Scholar is a widely used and accessible research database specifically designed for searching academic literature across a broad range of disciplines. It allows researchers to find peer-reviewed articles, theses, books, and

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conference papers from many sources in one place. Unlike general social media platforms or statistical software, it provides a direct link to scholarly publications, making it an essential tool for conducting a thorough literature search and building a credible foundation for scientific research in physical education.

151. (D) Normal probability curve
A Z-score, also known as a Sigma Score, is a standardized value that represents how many standard deviations a raw score is above or below the mean. This grading scale is fundamentally based on the properties of the normal probability curve, where scores are distributed in a predictable and symmetrical bell-shaped pattern. By using the Z-score, researchers can compare individual performances from different tests on a common scale, facilitating objective evaluation and interpretation of athletic and academic results.

152. (A) I and II only
Parametric tests are generally more powerful than non-parametric alternatives because they use more of the information available in the data, provided that the necessary assumptions of normality and equal variance are met. Non-parametric tests are particularly useful when working with data that is measured at the nominal or ordinal levels or when distributions are highly skewed. Understanding these differences is essential for researchers to select the most appropriate and robust statistical methods for their specific data and research questions.

153. (C) Obtaining assent from the child and informed consent from guardians.
When conducting research with children, the primary ethical concern is protecting their vulnerability while ensuring they have a voice in the process. This involves obtaining informed consent from a parent or legal guardian who can evaluate the risks and benefits. Additionally, researchers must obtain assent from the child, which is their voluntary agreement to participate based on a simple explanation of what they will do. This two-step process respects the rights and safety of both the children and their families.

154. (A) A study comparing the effects of two different stretching protocols on flexibility.
This study represents an experimental research method because the researcher is actively manipulating an independent variable, which is the type of stretching protocol. By controlling the conditions and observing the resulting change in flexibility, the researcher can determine if one protocol is more effective than the other. This active intervention is the defining characteristic of experimental research, distinguishing it from descriptive surveys or historical reviews which only observe or interpret existing situations and events without manipulation.

155. (A) Both A and R are true and R is the correct explanation of A.
A research problem must be stated clearly and concisely because it serves as the foundation for the entire study. A well-defined problem provides a specific direction for the researcher, ensuring that the study remains focused and logically organized. It also allows readers to understand exactly what is being investigated and why it is significant. Therefore, the need for clarity and guidance in the research process directly explains why a precise statement of the problem is a mandatory prerequisite.

156. (B) Experimental and certain descriptive research
The formulation of a hypothesis is a critical step in experimental research and many types of descriptive research where the goal is to test a specific prediction about the relationship between variables. While not required for all types of inquiry, such as purely exploratory or historical studies, a hypothesis provides the structured direction needed for scientific verification. By making a testable prediction, researchers can design their study to collect the evidence necessary to either support or reject their theoretical expectations.

157. (C) Astrological charts
Standard research tools in physical education include questionnaires, interviews, and observation, which are used to collect empirical data for systematic analysis. These instruments are designed to be objective, reliable, and scientifically sound. Astrological charts, however, are based on personal beliefs and are not recognized as valid or scientific tools for

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202. (A) To investigate the effect of static versus dynamic stretching on 100m sprint performance in collegiate athletes.
A well-formulated research problem must be specific, clear, and researchable, defining both the variables and the population. In this example, the researcher clearly states their intent to compare two stretching methods and measure their impact on a specific athletic performance in a defined group. This focused formulation provides a clear direction for the entire study, guiding the researcher in selecting the appropriate methodology and data collection tools needed to find a scientifically sound answer.

203. (A) Both Statement I and Statement II are true.
A directional hypothesis specifies the expected nature of the relationship or difference, such as predicting that one group will score significantly higher than another. In contrast, a non-directional hypothesis simply states that a relationship or difference exists between the variables without predicting which outcome will be larger. Both are valid types of research hypotheses, and the choice between them depends on the researcher's theoretical expectations and the existing evidence within the field of study.

204. (B) An original research article published in a peer-reviewed journal.
An original research article is considered a primary source because it provides a first-hand report of a study conducted by the authors themselves. These articles include original data and detailed descriptions of the methodology used to obtain the findings. In contrast, textbooks, encyclopedias, and review articles are secondary sources because they compile, summarize, and interpret information from many different primary studies long after the original research was actually conducted and shared with others.

205. (C) Cluster sampling
Cluster sampling is a probability technique used when a researcher divides a large population into existing, natural groups, such as schools, and then randomly selects some of those groups to include in the study. All individuals within the selected clusters are then measured. This approach is often more practical and cost-effective than simple random sampling when the population is geographically spread out, while still providing a robust method for obtaining a representative and generalizable sample.

206. (D) Ratio
Ratio data is the highest and most informative level of measurement because it possesses all the properties of other levels plus an absolute zero point. This zero indicates the complete absence of the characteristic being measured, such as weight or speed. Because of this true zero, researchers can make meaningful mathematical comparisons and state that one value is exactly twice as large as another. This precision allows for the most advanced statistical analysis in physical education research.

207. (A) 14
The Hull scale is a standardized grading system used in physical education that is fundamentally derived from the properties of the normal probability curve. This specific scale is defined by having a mean of 50 and a standard deviation of 14. By using these parameters to transform raw scores, the Hull scale allows for the objective evaluation of performance relative to a distribution, providing a consistent and comparable measure across different tests and individuals in a population.

208. (B) Independent samples t-test
The Mann-Whitney U test is a non-parametric statistical procedure used to compare the differences between two independent groups. It serves as the primary alternative to the independent samples t-test when the data does not meet the assumptions of normality or when the data is measured at the ordinal level. By ranking the data instead of using means, the Mann-Whitney U test provides a robust and valid analysis for skewed distributions or small samples where parametric tests are inappropriate.

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209. (B) Accurate, concise, and self-contained.
A research abstract must be accurate, concise, and self-contained to effectively summarize the most important elements of a study. It provides an overview of the purpose, methods, and results, allowing readers to understand the work without reading the full report. Maintaining these qualities is essential for academic communication, as it facilitates the indexing of research and helps other scientists quickly identify relevant studies.

165. (C) Discussion
The discussion section of a research report is where the researcher interprets the findings and explains their significance in the context of previous studies. This section is also used to address any limitations of the study and to offer practical conclusions and recommendations for future research. Rather than just reporting the numbers, the discussion provides the narrative that connects the results back to the original research question, helping readers understand the broader impact and value of the investigation.

166. (B) Historical
Historical research is the specific method primarily concerned with investigating events and phenomena that have already occurred, answering the question of what was. This retrospective approach involves the systematic collection and critical evaluation of past records, artifacts, and documents to understand the development of the field. By providing a detailed account of previous practices and ideas, historical research helps researchers understand how the past has shaped the current landscape of physical education, coaching, and athletic performance.

167. (D) Null hypothesis
A statement that predicts no significant difference between two groups, such as reaction times in male and female players, is a classic example of a null hypothesis. In research, this hypothesis serves as the baseline for statistical testing, with the researcher aiming to determine if the observed results are likely due to chance. By assuming there is no actual relationship or difference, the null hypothesis allows for an objective evaluation of the data through formal statistical procedures and inference.

168. (A) I, II, and III only
Interviews and observations are fundamental research tools for collecting qualitative and quantitative data through direct interaction or systematic witnessing of behavior. An opinionnaire is specifically designed to measure subjective attitudes and beliefs. While these three statements are accurate, the final statement is incorrect because a questionnaire can contain both open-ended and closed questions. Standard research practice involves selecting the tool that best fits the specific data collection needs and research questions of the study being conducted.

169. (C) To select a representative subset of a population to make inferences about the whole population.
The fundamental purpose of sampling is to select a small, manageable group of individuals from a larger population to study. If this subset is representative, the findings discovered in the sample can be accurately applied to the entire population through statistical inference. This makes research more practical and efficient, as it is often impossible to study every single member of a large group. Proper sampling techniques are essential for ensuring that the conclusions of a study are valid.

170. (A) It offers access to curated collections of books and journals.
A library is a vital resource for a literature search because it provides researchers with access to professionally curated collections of academic books, journals, and other verified sources of information. Unlike general internet searches that may yield unverified content, libraries offer reliable materials that have often undergone peer review or academic scrutiny. Utilizing these resources ensures that a researcher builds their study on a foundation of credible and high-quality evidence, which is essential for rigorous scientific inquiry.

171. (D) Nominal
Nominal data is the most basic level of measurement, where information is categorized into mutually exclusive groups with no intrinsic order or numerical value. For example, labeling different sports like swimming or cycling only serves to identify and distinguish the categories. Because these labels do not imply any rank or measurable distance, nominal data cannot be used for mathematical calculations like averages. Understanding this level of measurement is critical for selecting the appropriate non-parametric statistical tests for analysis.

172. (B) Mean = 50, SD = 10
A T-score is a standardized score used as a grading scale that transforms raw data into a consistent format for comparison. This distribution is defined by having a fixed mean of 50 and a

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a parametric test, it assumes that the differences between the scores are normally distributed. In contrast, the Mann-Whitney U, Kruskal-Wallis, and Wilcoxon tests are non-parametric alternatives used when data does not meet these assumptions or is measured at the ordinal level rather than on an interval scale.

188. (B) A detailed plan for data collection and analysis.
A critical component of a research proposal's methodology section is a clear and detailed plan for how the researcher will collect and analyze the data. This includes information about the participants, the tools to be used, and the specific statistical techniques for interpretation. A well-defined methodology demonstrates the feasibility and scientific rigor of the project, allowing reviewers to evaluate whether the proposed study is capable of answering the research questions and contributing to the academic field.

189. (C) Microsoft PowerPoint
Microsoft PowerPoint is the standard computer application used by researchers to create visual aids, such as slides, for academic presentations at conferences. It allows for the clear and organized display of key findings, data charts, and conclusions, helping to engage the audience and facilitate communication. While other software like SPSS or Excel are used for analysis and organization, PowerPoint is specifically designed to support the oral dissemination of research results to professional colleagues and the broader scientific community.

190. (A) P-4, Q-3, R-2, S-1
Formulating a research problem typically begins with a thorough review of existing literature to identify a specific area of inquiry. Data collection often involves conducting a survey to gather firsthand information from participants. Once the data is gathered, it is analyzed using specialized software like SPSS to perform statistical calculations. Finally, reporting findings requires the systematic writing of a research report to communicate the study's results. Matching these steps with their tools is essential for effective scientific practice.

191. (A) Fabrication
Fabrication is a major ethical violation in research where a researcher invents data or results that were never actually collected. This dishonest practice undermines the integrity of the scientific process and misleads other researchers and the public. Ethical research requires that all reported findings be based on evidence gathered through systematic investigation. Fabrication is considered professional misconduct and can lead to severe consequences, including the retraction of publications and damage to the researcher's career and institutional reputation.

192. (B) Collecting data from a population at one specific point in time.
A cross-sectional survey is a descriptive research method that involves collecting data from a sample of a population at a single, specific point in time. This provides a snapshot of the current status, attitudes, or characteristics of the group being studied. Unlike longitudinal research, it does not track individuals over a long period. This approach is efficient for identifying prevalent trends and relationships between variables within the population without the time and cost required for long-term repeated measurements.

193. (B) Using sample data to make a probabilistic decision about the null hypothesis.
The process of hypothesis testing involves the systematic use of sample data to make a probabilistic decision regarding whether to reject or retain the null hypothesis. Because it is impossible to be 100% certain about a population based on a sample, researchers use statistical significance to determine the likelihood that their findings are real rather than due to chance. This objective method allows scientists to draw meaningful conclusions and make evidence-based inferences within the field of research.

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194. (A) A checklist of physical skills
A checklist of physical skills is a structured tool used to record observable behaviors, making it least effective for understanding the deep, subjective experiences of athletes. To capture thoughts, feelings, and personal perspectives, researchers must use qualitative tools like in-depth interviews, focus groups, or open-ended questionnaires. These methods allow for detailed exploration of the human experience, providing

180. (D) Manipulation of an independent variable and control of extraneous variables
The defining characteristic of experimental research is the active manipulation of an independent variable combined with the rigorous control of extraneous factors to establish cause-and-effect relationships. This intervention allows researchers to observe how specific changes directly influence a dependent variable, such as athletic performance. Unlike descriptive or historical methods that only observe or interpret existing data, experimental research provides the strongest evidence for the impact of training protocols, coaching techniques, or other treatments within the study.

181. (C) There will be a positive correlation between hours of weight training and muscular strength.
A suitable research hypothesis should be a testable prediction that specifies the expected relationship between two or more variables. Predicting a positive correlation between training hours and strength provides a clear, measurable expectation that can be analyzed using statistical methods. This statement goes beyond general facts or methodological descriptions, offering a focused direction for the study. By stating this prediction in advance, the researcher establishes a logical framework for evaluating the data and drawing meaningful scientific conclusions.

182. (B) A specific set of questions is asked to all respondents.
A structured interview is a data collection method where the researcher asks a predetermined and fixed set of questions to every participant in a consistent order. This standardized approach ensures that all respondents are asked the same information, which facilitates the objective comparison and analysis of the data. While it lacks the flexibility of an unstructured interview to explore unexpected topics, its consistency is highly valuable for descriptive studies that aim to gather specific, comparable information from a group.

183. (D) A peer-reviewed article in a major journal.
Peer-reviewed articles in major academic journals are considered the most credible sources for a literature search because they have undergone a rigorous evaluation process by experts in the field. This ensures that the methodology is sound, the evidence is strong, and the conclusions are valid. While social media, blogs, and public forums may offer interesting insights, they lack the formal quality control and scientific standards required for a reliable academic foundation in physical education and research.

184. (C) Statement I is true, but Statement II is false.
Non-probability sampling techniques are inherently less likely to produce a representative sample than probability methods because they do not rely on random selection from the entire population. Consequently, the findings from a study using convenience sampling have low generalizability, as the participants are chosen based on ease of access rather than their ability to represent the larger group. Therefore, while the first statement accurately describes the limitation of non-probability methods, the second statement incorrectly assesses their external validity.

185. (C) Dispersion or variability
In statistics, measures of dispersion or variability are used to describe how spread out the individual scores are within a data set. These include the range, variance, and standard deviation, which indicate the degree to which values deviate from the central mean. Understanding variability is essential for researchers to assess the consistency and reliability of their data. While measures of central tendency provide the typical score, dispersion measures offer a more complete picture of the data's overall distribution.

186. (A) 9
The Stanine scale is a standardized grading system that divides a distribution of raw scores into nine distinct parts, with 1 being the lowest and 9 being the highest. This system is fundamentally based on the normal probability curve, with each stanine representing a fixed width of the standard deviation. By transforming complex data into a simple nine-point scale, researchers and educators can more easily categorize performance levels and compare individual results within a specific population or group.

187. (D) Paired Samples t-test
The paired samples t-test is a parametric statistical technique used to compare the means of two related groups, such as the same subjects tested before and after a training intervention. As

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gathering research data. The integrity of scientific inquiry depends on using methodologies and tools that can be independently verified and are grounded in evidence and logical reasoning.

158. (D) S, R, Q, P
The levels of measurement are ordered from least to most informative starting with nominal data, which only provides categories. Next is ordinal data, which adds a meaningful rank order. Interval data follows, providing equal distances between values but no true zero. Finally, ratio data is the most informative, possessing equal intervals and an absolute zero point. This progression from simple classification to complex mathematical properties is fundamental for researchers to understand the type of analysis their data can support.

159. (A) Communicate research findings to the broader scientific community.
The primary purpose of preparing a paper for publication is to disseminate new research findings and contribute to the collective body of scientific knowledge. By sharing their work in peer-reviewed journals, researchers allow others to evaluate their methods, verify their results, and build upon their discoveries. This process of communication is essential for the advancement of the field, as it ensures that new ideas are documented and accessible to other professionals, educators, and policy makers worldwide.

160. (C) P-4, Q-2, R-1, S-3
Reviewing past studies is the primary goal of a literature search, while testing the effect of a variable is the defining feature of experimental research. Surveying current attitudes is a common task in descriptive research to understand the present situation. Finally, protecting participant identity is a critical ethical issue related to confidentiality. Correctly matching these activities with their research concepts demonstrates a comprehensive understanding of the different stages and responsibilities involved in conducting a scientific study.

161. (B) A positive correlation
A positive correlation exists when two variables move in the same direction; as one increases, the other also tends to increase. In this example, the finding that higher training volumes are associated with higher injury rates indicates a clear positive relationship. While this correlation shows an association, it does not necessarily prove that training volume causes injuries, as other factors may be involved. Statistical correlation is a key descriptive tool for identifying patterns within data for further investigation.

162. (A) Snowball Sampling
Snowball sampling is a non-probability technique where initial participants help recruit additional subjects from their own social circles. This method is often used to reach difficult-to-find or marginalized populations where no list of members exists. Because participants are not selected through random chance, every individual in the population does not have an equal opportunity to be included. This contrasts with probability methods like simple random, systematic, or cluster sampling, which are designed to produce more representative and generalizable samples.

163. (A) Both Statement I and Statement II are true.
The normal probability curve is characterized as being unimodal, meaning it has a single peak where the mean, median, and mode are all located. It is also asymptotic, which describes how the tails of the curve continuously approach the horizontal axis but never actually touch it. These mathematical properties are essential for understanding the theoretical distribution of scores and for applying various parametric statistical tests that rely on the predictable nature of the normal curve in a population.

164. (D) Storing, organizing, and performing calculations on data.
Microsoft Excel is a versatile spreadsheet application that is highly effective for storing and organizing large sets of research data. It provides numerous functions for performing basic and intermediate mathematical calculations, creating tables, and generating charts to visualize findings. While it is not as specialized as SPSS for advanced statistical modeling, its accessibility and organizational power make it an essential tool for the initial stages of data management and descriptive analysis in many research projects.

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rich insights that numerical data and simple behavioral records cannot offer, which is essential for studying the psychological aspects of sports.

195. (C) A is true but R is false.
The choice between probability and non-probability sampling depends on the specific objectives, resources, and requirements for generalizability in a research study. While probability sampling is robust and supports stronger generalizations, it is not always superior or practical for every situation. Non-probability sampling is often used for preliminary or qualitative research where random selection is not feasible or necessary. Therefore, while sampling selection is a careful decision, the assertion that one method must always be used is incorrect.

196. (D) Ordinal
The rank order of winners in a competition is a classic example of ordinal data. In this level of measurement, the numbers 1st, 2nd, and 3rd represent a clear and meaningful sequence, but they do not provide information about the actual distance or time between the competitors. While we know the order of finish, the intervals between the ranks are not necessarily equal or measurable, which distinguishes ordinal data from more precise interval or ratio-level measurements.

197. (C) 100% of the cases or the total probability of all outcomes.
The total area under the normal probability curve represents 100 percent of the cases in a distribution or the total probability of all possible outcomes. This mathematical property is fundamental to statistics, as it allows researchers to use the curve to calculate the exact percentage of a population that falls within specific ranges, such as standard deviations from the mean. Understanding the area under the curve is essential for interpreting scores and determining the significance of research findings.

198. (B) Ensure the validity and reliability of the conclusions drawn from the data.
Applying appropriate statistical techniques is vital for ensuring that the conclusions drawn from research data are valid and reliable. These objective methods provide a scientific framework for analyzing information and determining the likelihood that findings are statistically significant. By matching the analysis to the research question and data type, researchers reduce the risk of bias and error, providing a solid evidence-based foundation for making professional recommendations and advancing knowledge in the field of physical education.

199. (D) The researcher's personal diary
A research report is a formal document that systematically records the study's rationale, methodology, results, and discussion. It is designed to communicate the findings clearly to other professionals and researchers. While an introduction and methodology are mandatory components for technical reporting, a researcher's personal diary is not a standard part of the document. Personal reflections may be kept during the process, but the final report must be objective, following established academic standards for transparency and professional communication.

200. (D) I, II, III, and IV
Modern research relies on a variety of computer applications to enhance efficiency and communication. SPSS is a vital tool for statistical analysis, while Microsoft Word is used for writing and formatting technical reports. Search engines such as Google Scholar facilitate the discovery of existing academic literature, and e-mail is essential for coordinating with collaborators. All four of these applications play significant and distinct roles in supporting the various stages of the scientific research process today.

201. (C) Experimental
Experimental research is the most appropriate method for investigating cause-and-effect relationships because it involves the active manipulation of an independent variable, such as a new coaching technique. By controlling for extraneous factors and comparing the results to a control group, researchers can determine if the intervention directly caused a change in the dependent variable, like swimming speed. This rigorous approach provides the strongest evidence for the effectiveness of new methods in physical education and sports.

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standard deviation of 10. This standardization allows researchers to interpret how an individual performs relative to the group mean, with scores above or below 50 indicating performance levels. The T-score is particularly useful in physical education for evaluating fitness and skill test results.

173. (C) Compare the means of two groups.
The t-test is a common parametric statistical procedure used when a researcher wants to determine if there is a significant difference between the means of two distinct groups. For example, it could be used to compare the performance of male and female athletes on a fitness test. By evaluating the difference relative to the variability in the data, the t-test helps researchers decide whether the observed outcome is likely due to the intervention or simply random chance.

174. (D) A blueprint or plan for a research project.
A research proposal is a formal document that serves as a detailed blueprint or plan for an upcoming investigation. It outlines the rationale for the study, the specific research problem, and the methodology that will be followed to collect and analyze the data. By providing this structure before the work begins, the proposal allows for peer review and feedback, ensuring that the research is logically sound and feasible before significant time and resources are committed.

175. (A) Both A and R are true and R is the correct explanation of A.
Conducting a literature search is an essential early step because it provides the researcher with a comprehensive understanding of the current state of knowledge. By identifying what has already been investigated, the researcher can find gaps that justify their own study and avoid the unnecessary duplication of work. Therefore, the goal of situating a new project within the existing academic context directly explains why a thorough review of literature is a mandatory requirement for any scientific inquiry.

176. (B) Cluster sampling
Cluster sampling is a probability technique where the population is divided into groups, and entire clusters are randomly selected for inclusion in the study. Because the selection is based on random chance, every member of the population has a known probability of being included, which supports the generalizability of the findings. In contrast, convenience, quota, and purposive sampling are non-probability methods that rely on the researcher's judgment or ease of access rather than random selection principles.

177. (B) Descriptive Research
A case study involves an in-depth and detailed investigation of a single individual, group, or event to gain a comprehensive understanding of a specific phenomenon. This qualitative approach falls under the broader category of descriptive research, as its primary purpose is to establish and describe what is happening in a particular situation. While it provides deep insights, its findings are typically limited to the specific case being studied and are not directly generalizable to the larger population.

178. (A) I and II only
Ethical research is defined by obtaining informed consent, which ensures that participants volunteer with a full understanding of the study's procedures. While deception should be avoided, it is sometimes justified if followed by a thorough debriefing to explain the true purpose. Anonymity means identities are never known, not just kept private. Fabrication of data is always unethical, and coercion is never acceptable. Therefore, only the first two statements accurately reflect the core ethical standards required for academic research.

179. (C) Offer a brief overview of the entire study and its results.
An abstract is a concise and self-contained summary that provides a quick overview of the entire research study, including its purpose, methodology, and primary findings. By reading the abstract, other researchers can efficiently determine if the study is relevant to their own work without having to read the full technical report. It is a critical component of academic communication, facilitating the rapid dissemination of new scientific knowledge and helping researchers manage large volumes of published information.

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An effective abstract is professional in tone and strictly follows the required formatting standards.

210. (B) P-2, Q-4, R-3, S-1
A hypothesis is a testable statement predicting a relationship, while a variable is any characteristic that can take on different values. The entire group being studied is the population, and a representative subset of that group is the sample. Correctly identifying these fundamental terms is essential for understanding the research process and for communicating findings clearly. This conceptual framework allows researchers to logically design their studies, collect appropriate data, and draw valid conclusions that apply to the broader field.

211. (C) Beneficence
The ethical principle of beneficence requires researchers to ensure that the potential benefits of a study justify any possible risks to the participants. This means that researchers must actively work to maximize positive outcomes while minimizing harm or distress. This principle is a cornerstone of ethical research with human subjects, requiring a careful balance between the pursuit of scientific knowledge and the protection of individual welfare. It is a mandatory consideration for all research projects from design through execution.

212. (D) Descriptive research
A study that aims to establish and document the specific characteristics of a group, such as the profiles of elite runners, is an example of descriptive research. Its primary focus is on describing what is currently happening within that population without manipulating any variables. By collecting data through surveys or observations, researchers can build an accurate and detailed picture of training and health, which provides essential baseline information for identifying trends and developing future interventions in the field.

213. (C) P, R, S, Q
The correct sequence for hypothesis testing begins with stating the null and alternative hypotheses to define the research expectations. Next, data is collected through systematic investigation. The researcher then computes the test statistic using the gathered evidence. Finally, a decision is made to either reject or fail to reject the null hypothesis based on the statistical results. This structured process ensures that inferences about a population are made objectively and follow rigorous scientific and mathematical standards.

214. (B) A flexible, conversational approach with open-ended questions.
An unstructured interview is a qualitative research tool characterized by a flexible and conversational style. Unlike structured interviews, it does not follow a fixed set of questions, allowing the researcher to explore topics as they naturally arise during the interaction. This approach is highly effective for gathering deep, rich insights into an individual's thoughts and experiences, as it encourages participants to share their stories in their own words, providing a comprehensive understanding of their subjective perspective.

215. (D) Assessing the methodology, arguments, and evidence presented.
Critical reading is an essential part of a literature search that involves actively evaluating the methodology and arguments in published research. Rather than simply accepting findings, a researcher must scrutinize the evidence and identify any strengths or limitations in the studies they read. This evaluative approach helps in synthesizing information and building a strong theoretical foundation for their own work. By identifying high-quality research, the researcher ensures that their project is grounded in reliable and scientific evidence.

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216. (A) Simple random sampling
Simple random sampling is a probability technique where every individual in the entire population has an equal and independent chance of being selected for the study. By using random selection methods, such as a lottery or a random number generator, researchers eliminate bias and ensure that the sample is representative of the larger group. This method is fundamental to statistical inference, as it provides the most scientifically robust way to generalize findings from a small sample to the population.

217. (C) Ordinal data
Ordinal data is a level of measurement where categories can be ranked in a clear sequence, but the distance between those ranks is not specified

or equal. For example, a scale of satisfaction ranging from low to high provides an order but doesn't measure the exact difference between each level. This type of data provides more information than simple categorization but lacks the mathematical precision of interval or ratio scales, where the numerical intervals are consistent and measurable.

218. (A) Gaussian curve
The normal probability curve is frequently called the Gaussian curve, named after the mathematician Carl Friedrich Gauss who described its properties. This theoretical distribution is characterized by its perfectly symmetrical, bell-shaped appearance, representing how many natural traits are distributed in a population. Understanding the Gaussian curve is fundamental to many statistical concepts and parametric tests, as it provides a predictable mathematical model for analyzing scores and identifying the probability of various outcomes in scientific research.

219. (D) I is false, but II is true.
The choice of a statistical test is directly dependent on the level of measurement of the data, as parametric tests require interval or ratio data and specific assumptions. Conversely, the Chi-square test is an appropriate and common non-parametric procedure used specifically for analyzing the relationship between two categorical variables. Therefore, while the first statement incorrectly characterizes the selection process for statistical analysis, the second statement accurately identifies a primary use for the Chi-square test in research.

220. (A) Both A and R are true and R is the correct explanation of A.
A well-structured research report is essential for scientific communication because it provides a clear and organized account of the entire investigation. By following established formatting standards, a researcher ensures that readers can systematically follow the logic of the study, from the rationale through the results and conclusions. Therefore, the goal of achieving clarity and transparency in documenting the scientific process directly explains why a structured format is a mandatory requirement for effective professional and academic reporting.

221. (C) The immediate effect of a new supplement on muscle growth.
Historical research focuses on interpreting past events and records to understand the evolution of physical education and sports. While it investigates biographies and rule changes from previous eras, it is not suitable for studying the immediate, real-time effects of a new intervention. Such a study would require an experimental or descriptive approach to collect and analyze current data. Historical inquiry is retrospective by nature, relying on existing artifacts and documents to reconstruct and analyze occurrences from the past.

222. (D) Pre-experimental design
A pre-experimental design is an initial approach to research that lacks a control group or the random assignment of subjects, making it the least rigorous experimental method. Because of these limitations, it is difficult to determine if a treatment truly caused an observed change, as many extraneous variables are not controlled. While useful for exploratory purposes or pilot studies, pre-experimental designs have low internal validity and are generally followed by more robust quasi-experimental or true experimental studies to confirm findings.

223. (A) Identifying a broad area of interest.
The first step in formulating a research problem involves identifying a broad area of interest that the researcher wishes to explore. From this wide starting point, the researcher can then use literature reviews and professional experience to narrow the topic into a specific, researchable question. This initial identification provides the necessary context for the entire study, guiding the subsequent development of the hypothesis and the selection of the methodology and data collection tools needed for investigation.

224. (B) I, II, III
Questionnaires and interviews are efficient research tools for gathering data from large groups or gaining deep qualitative insights. Observation is also valuable but can be influenced by the presence of the researcher. However, opinionnaires measure subjective beliefs rather than factual metrics like height, and a questionnaire is a research instrument rather than a sampling method. Therefore, only

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the first three statements accurately describe the characteristics and functions of these standard research tools in the field of physical education.

225. (B) In probability sampling, the probability of selecting any member of the population is known. A key difference between probability and non-probability sampling is that probability methods ensure every member of the population has a known and non-zero chance of being selected. This mathematical foundation allows researchers to use the sample data to make statistically valid inferences about the whole population. Non-probability techniques, while often easier to perform, do not provide this known chance, which limits their representativeness and the ability to generalize the study's findings to a larger group of individuals.

226. (A) Temperature in degrees Celsius
Interval level data is characterized by having equal distances between numerical values, but it lacks a true or absolute zero point. Temperature in Celsius is a perfect example because the difference between 10 and 20 degrees is the same as the difference between 20 and 30, but zero degrees does not indicate an absence of temperature. In contrast, nationality is nominal, finishing place is ordinal, and weight is ratio data because it possesses a true mathematical zero.

227. (C) 34.13%
In a perfectly normal distribution, which is represented by a symmetrical bell-shaped curve, specific percentages of scores fall within set ranges from the mean. Approximately 34.13 percent of all cases lie between the mean and one standard deviation above it. Because the curve is symmetrical, an identical percentage also falls between the mean and one standard deviation below. Understanding these fixed probabilities is essential for interpreting standardized scores and determining the statistical significance of results in research.

228. (D) Kruskal-Wallis H test
The Kruskal-Wallis H test is a non-parametric statistical procedure used to compare the distributions of three or more independent groups. It serves as the non-parametric equivalent of the one-way ANOVA, used when the data does not meet the assumptions of normality or equal variance. By using the ranks of the scores rather than their means, the Kruskal-Wallis test provides a robust method for identifying significant differences among several groups, particularly when working with ordinal data.

229. (C) Introduction/Rationale
The introduction or rationale section of a research proposal is where the researcher justifies the need for the study. This part of the document outlines the problem, explains its theoretical and practical significance, and highlights the gaps in existing knowledge that the new investigation aims to fill. By providing this justification, the researcher convinces reviewers and stakeholders that the project is important and worthy of the time and resources required to conduct the proposed scientific inquiry.

230. (B) Boolean operators
Boolean operators, such as AND, OR, and NOT, are essential tools for refining searches within a research database. AND is used to narrow results to include multiple specific terms, while OR broadens the search to include synonyms. NOT is used to exclude irrelevant topics. By using these operators, researchers can significantly improve the precision and efficiency of their literature search, ensuring that the articles they find are highly relevant to their specific research problem and objectives.

231. (D) Method or approach used to conduct the study.
The primary classification of research into descriptive, historical, and experimental categories is based on the specific method or approach used to investigate a problem. Descriptive research focuses on what is currently happening, historical research analyzes what has occurred in the past, and experimental research tests cause-and-effect relationships through manipulation. This classification system helps researchers select the most appropriate strategy for their inquiry, ensuring that the design aligns with the specific nature of the research question and objectives.

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232. (A) Informed consent
The ethical principle of informed consent requires that all participants be fully aware that they are part of a study and understand what

of a treatment from other confounding factors, ensuring high confidence in the final conclusions.

262. (B) Threats to internal validity or alternative explanations for outcomes.
A robust research framework must effectively manage factors that might provide competing explanations for the observed results. By implementing specific controls during the selection and assignment of participants, researchers can minimize these potential distortions. This focus on internal validity ensures that changes in the measured outcome are truly attributable to the experimental intervention rather than extraneous or unaccounted-for situational variables.

263. (C) Minimize ambiguity in the interpretation of results.
The strength of a scientific study is directly linked to its capacity for producing clear and indisputable findings. Highly rigorous blueprints are designed to eliminate confusion and alternative explanations regarding the relationships between variables. By reducing uncertainty through controlled environments and systematic procedures, researchers can provide a definitive interpretation of the data, thereby enhancing the overall credibility of the scholarly work.

264. (D) By helping to rule out the influence of confounding extraneous factors.
Valid conclusions in causal research depend on the researcher's ability to isolate the specific effect of the independent variable. A well-organized structural plan achieves this by accounting for and neutralizing external influences that might otherwise distort the data. By excluding these confounding factors, the study ensures that the observed changes are genuinely caused by the intervention being tested by the researcher.

265. (A) Provide a controlled environment for systematic hypothesis testing.
Despite their variety, all causal research frameworks share a unifying objective related to empirical investigation. They strive to establish a regulated setting where researchers can systematically test specific predictions about variable relationships. This controlled approach is essential for ensuring that findings are generated through rigorous methods, ultimately lending a high degree of validity and scientific credibility to the final research results.

266. (B) The identification of a research problem.
Formal scientific investigation begins with the critical task of recognizing a specific gap in knowledge or a practical issue needing resolution. This initial phase involves pinpointing contradictions in current findings or unaddressed areas within the field. Successfully defining this focus area provides the necessary direction for the entire study, guiding the development of hypotheses and the selection of analytical methodologies.

267. (B) A tentative, testable statement about variable relationships.
Within the scientific process, a hypothesis serves as a bridge between the research problem and empirical testing. It is formulated as a precise, unambiguous prediction concerning the expected interactions between different variables. Because these statements are designed for verification through data collection, they allow researchers to translate theoretical questions into concrete, measurable terms that can be evaluated using formal procedures.

268. (A) To use statistical methods to evaluate the hypothesis against data.
Evaluation of scientific predictions involves a formal procedure where gathered evidence is weighed against the initial research statements. Statistical analysis is employed to determine the viability of these predictions, providing a structured way to either support or reject them. While this process does not establish absolute truth, it offers the empirical evidence needed to draw sound, evidence-based conclusions for research.

269. (C) Clear, specific, and manageable.
Effective scientific inquiry requires a precisely defined focus that can be realistically investigated within the study's limitations. A well-constructed problem statement avoids ambiguity, ensuring that the researcher and audience understand exactly what is being examined. By maintaining specificity and feasibility, the researcher can develop a structured plan that leads to meaningful

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determine the significance of their findings. This relationship makes the study of the normal curve a mandatory prerequisite for advanced data analysis in physical education and sports science.

240. (B) One-way Analysis of Variance (ANOVA)
The Kruskal-Wallis H test is a non-parametric statistical procedure used to compare the distributions of three or more independent groups. It is specifically designed as the non-parametric equivalent of the one-way ANOVA, suitable for situations where the data is ordinal or does not meet the assumption of normality. By analyzing the ranks of the scores, the Kruskal-Wallis test allows researchers to identify significant differences among multiple categories, providing a robust tool for analyzing diverse types of research data.

241. (B) Raw data spreadsheets for all participants
A paper prepared for publication must include essential components like an abstract, introduction, and methods to clearly communicate the study's rationale and procedures. It also presents the analyzed results and discussion. However, providing the full raw data spreadsheets for every participant is not a standard requirement for the manuscript itself. Instead, researchers present summarized data in tables and figures. The raw data is typically kept by the researcher for verification purposes or shared through separate data repositories if required by a journal.

242. (A) Provides an evidence-based foundation for practice.
Research is of fundamental importance in physical education because it provides an evidence-based foundation for all professional practices. By conducting systematic studies, researchers identify the most effective strategies for coaching, teaching, and health promotion. This scientific approach ensures that interventions are based on facts rather than tradition or intuition, leading to better outcomes for students and athletes. Research drives the continuous improvement of the field, making it a mandatory component for any professional who aims to optimize human performance.

243. (C) Replicated
The methodology chapter of a research report must provide a clear and comprehensive description of the study's procedures to ensure it can be replicated by other scientists. Replication is a cornerstone of the scientific process, as it allows other researchers to verify findings and confirm their reliability across different settings. By providing detailed information about the participants, tools, and exact steps taken, a researcher demonstrates transparency and rigor, which are essential for maintaining the integrity and advancement of scientific knowledge.

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244. (B) I, II, and III only
Descriptive research, historical research, and experimental research are three primary methods that investigate what is happening, what has happened, and why things happen, respectively. Each method provides unique and valuable insights into different aspects of physical education. All three are considered scientifically valid approaches to inquiry when conducted with rigor. The assertion that only experimental research is scientific is incorrect, as descriptive and historical methods also follow systematic and objective procedures to build a reliable body of academic and practical knowledge.

245. (C) Actively evaluating the information and arguments presented.
Critical reading during a literature search is a purposeful activity that involves actively evaluating the methodology and arguments in published studies. It requires the researcher to move beyond a simple summary and instead scrutinize the evidence and identify any potential biases or limitations. This deep engagement with the material is essential for synthesizing information and building a strong theoretical framework for a new study. By identifying high-quality evidence, the researcher ensures their project is grounded in reliable and rigorous scientific knowledge.

246. (B) Unknown
In non-probability sampling techniques, the likelihood of any specific member of the population being selected for the study is unknown. Because these methods rely on the researcher's judgment or the easy availability of participants rather than random chance,

mathematical rigor needed for population-wide inferences. Because participants are not chosen through a random process, the resulting sample may contain inherent biases that do not reflect the wider group. Consequently, the results obtained from such studies are limited in scope and cannot be safely applied beyond the sample.

279. (C) A non-probability strategy based on convenience.
Selecting participants based on their accessibility to the researcher is a common approach in certain research contexts. This strategy does not utilize random selection, meaning that not every individual in the population has a chance to participate. While efficient and practical, this method results in a sample that may not represent the broader population, making it difficult to generalize the research findings.

280. (D) The research objectives and the need for generalizability.
The selection of a sampling strategy is a strategic decision determined by the goals of the investigation. If the study requires results that can be applied to a large, diverse population, a random approach is necessary. However, if the focus is on a specific, hard-to-reach group or preliminary exploration, other methods might be prioritized based on feasibility and the research intent.

281. (A) Symmetrical and bell-shaped.
This theoretical distribution is characterized by its distinct, balanced appearance where both halves of the graph are mirror images. The highest point occurs in the center, representing the mean, with the frequency of scores tapering off equally in both directions toward the lower and upper extremes. This specific shape is a fundamental model for representing many natural human traits and athletic abilities.

282. (B) Clustered around the central mean.
In a standard symmetrical distribution, the most frequently occurring values are found in the middle of the range. As one moves away from this central point toward the high or low ends, the number of individuals with those specific scores decreases significantly. This clustering demonstrates that most participants perform near the average level, with very few exhibiting exceptionally high or low results.

283. (B) The development of grading scales.
The principles of the normal distribution provide a standardized framework for assessing and categorizing human performance. By assuming that abilities follow a bell-shaped pattern, researchers can create systems that rank individuals relative to the group average. This application is particularly useful in educational settings for assigning labels like “excellent” or “average” based on where a person’s score falls within the distribution.

284. (A) An individual’s position relative to the group’s mean.
Evaluation systems that rely on group performance distributions categorize individuals based on how they compare to their peers. Rather than using an absolute mastery score, these scales determine a person’s level by identifying their distance from the average score of the entire group. This method ensures a standardized way to assess relative standing and is grounded in the properties of the normal curve.

285. (C) Many inferential statistical tests.
The mathematical properties of the bell-shaped distribution are essential for drawing broader conclusions from sample data. Many advanced analytical procedures rely on the assumption that the data follow this specific pattern to provide accurate results. These tests allow researchers to determine if the findings are significant and can be generalized to the entire population, making the normal curve a scientific cornerstone.

286. (D) To transform raw data into meaningful information.
Raw data collected during a study consists of unorganized figures that lack inherent clarity. Analytical procedures are required to process these numbers, moving the research beyond simple collection toward actual knowledge generation. By applying these systematic methods, researchers can identify patterns, summarize findings, and draw objective conclusions, effectively turning a collection of isolated points into a coherent and understandable research narrative.

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integrity and safeguarding the welfare of human subjects throughout every stage of the study.

254. (D) A compromise in research validity and a loss of public trust.
Adhering to ethical standards is foundational for the credibility of scientific findings within the physical education field. When researchers neglect these essential moral principles, the overall validity of their results is severely undermined. Furthermore, such failures damage the relationship between science and society, leading to a significant decline in public confidence and institutional reputation among the broader scientific community.

255. (C) The moral imperative to protect human participants.
Scientists must navigate a delicate balance between expanding the boundaries of specialized knowledge and fulfilling their ethical obligations. While the search for new information is vital for the discipline's growth, it must never supersede the fundamental duty to ensure the safety of participants. This moral responsibility remains a non-negotiable aspect of conducting professional and valid research in any field.

256. (B) Descriptive research.
This specific inquiry method focuses on providing an accurate and detailed profile of current phenomena within a natural setting. By observing and measuring variables exactly as they exist, researchers can answer fundamental questions regarding the existing state of a situation. It avoids manipulating any elements, ensuring the final documentation reflects the authentic characteristics of the targeted population being studied.

257. (D) The deliberate manipulation of variables to establish causality.
The hallmark of this methodology is the researcher's active intervention to determine how one factor influences another specific outcome. By systematically altering independent variables while strictly controlling for extraneous influences, scientists can confidently establish cause-and-effect relationships. This rigorous and controlled environment distinguishes it from other forms of inquiry that merely observe or reconstruct events without any form of active intervention.

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258. (A) Historical research.
Investigating past events through the critical evaluation of primary and secondary sources allows for a deeper understanding of current trends. By systematically reconstructing coaching evolutions or similar developments from previous decades, researchers can test hypotheses regarding causes and effects over time. This narrative approach is essential for interpreting long-term changes and anticipating the future direction of the physical education discipline.

259. (C) Experimental research involves variable manipulation, whereas descriptive research does not.
Different methodologies are distinguished by their level of intervention in the study environment. While one approach aims to portray variables in their natural state without interference, the other requires the researcher to intentionally modify specific factors. This distinction allows scientists to either describe "what is" or investigate causal links by measuring outcomes resulting from controlled and deliberate changes to the environment.

260. (A) Systematically collecting and evaluating data related to past occurrences.
Understanding the present state of a discipline often requires a deep dive into its previous iterations and developmental milestones. Researchers achieve this by meticulously gathering evidence from various sources and performing a critical evaluation of these past events. This systematic reconstruction helps in identifying causal patterns and trends, which are vital for anticipating future developments within the scientific field today.

261. (D) To structure an investigation to isolate and measure causal effects.
Establishing causality requires a highly structured blueprint that can clearly distinguish the impact of specific variables. The fundamental aim is to create a configuration where the relationship between an intervention and its outcome is precisely measured. This organized framework allows researchers to separate the actual effects

their involvement entails. Failing to inform individuals that they are being observed violates their autonomy and right to privacy. While some observational research may use covert methods, these must be strictly justified and approved by ethical review boards to protect the subjects. Informed consent is a mandatory standard that ensures the trust and safety of research participants.

233. (C) Sample data against expectations under a true null hypothesis.
Hypothesis testing is a formal statistical procedure where collected sample data is compared against what would be expected if the null hypothesis were true in the population. The researcher calculates the probability of obtaining such data by chance. If this probability is very low, the null hypothesis is rejected in favor of the alternative. This comparison provides an objective and scientific way to determine if research findings are significant, allowing for evidence-based conclusions within the field of study.

234. (A) P-2, Q-4, R-1, S-3
Jersey numbers represent nominal data used for labeling, while rankings in a competition are ordinal. Temperature in Fahrenheit is interval data because it lacks a true zero, and height in meters is ratio data because zero indicates an absolute absence of height. Correctly matching these examples with their levels of measurement is essential for researchers to understand the mathematical properties of their data and to select the most appropriate statistical tests for their subsequent data analysis.

235. (D) Basketball players will have significantly higher agility scores than soccer players.
A research or alternative hypothesis is a specific declarative statement that predicts the expected outcome of a study based on theory or prior evidence. Predicting a significant difference in agility between two groups provides a focused and testable statement that guides the investigation. Unlike the null hypothesis which predicts no difference, or methodological descriptions which explain how the study is done, the alternative hypothesis reflects the researcher's actual prediction and provides a clear direction for scientific testing.

236. (B) High degree of objectivity and ease of data analysis.
The primary advantage of using a structured observation with a predetermined checklist is its high degree of objectivity. Because the observer focuses only on specific, defined behaviors, the risk of personal bias is reduced, and the resulting data can be easily quantified and analyzed. This standardized approach ensures consistency across different observers and settings, making it an excellent tool for descriptive research that aims to accurately document the frequency and nature of specific actions in athletic or educational environments.

237. (C) Helps users find information on the World Wide Web.
A search engine is a powerful digital tool designed to help users locate specific information across the vast content of the World Wide Web. By using keywords and algorithms, it indexes web pages to provide relevant results for a user's query. In research, search engines are essential for discovering academic articles, reports, and other resources during the literature search phase. While they facilitate the discovery of information, researchers must still critically evaluate the credibility and relevance of the sources found.

238. (A) Both Statement I and Statement II are true.
A sample is a smaller subset of individuals selected from a larger population for the purpose of a study. This approach is common because it is often impractical to measure every member of a group. In contrast, a census involves the systematic collection of data from every single member of the population. Both concepts are fundamental to understanding how data is gathered in research, with sampling providing a more efficient way to make inferences about the larger group when a census is unfeasible.

239. (A) many parametric statistical tests.
The mathematical properties of the normal probability curve are essential for understanding the theoretical foundation of many parametric statistical tests. These tests rely on the assumption that the data being analyzed follows a normal distribution in the population. By utilizing the predictable nature of the bell-shaped curve, researchers can calculate probabilities and

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and actionable results within the available academic resources.

270. (D) Problem formulation, hypothesis development, and hypothesis testing.
The internal logic of empirical research follows a sequential path that connects conceptual ideas to evidence-based outcomes. This process starts with defining a specific issue, followed by creating testable predictions, and finally evaluating those predictions through rigorous analysis. This chain of events provides a structured guidance system for the entire investigation, ensuring that the final conclusions are always scientifically sound.

271. (C) Opinionnaires.
Researchers utilize various specialized instruments to collect data from participants. One specific tool is designed to capture the subjective viewpoints or stances individuals hold regarding particular topics or issues. While similar to standard questionnaires, its unique purpose is the systematic measurement of attitudes. This allows for the collection of qualitative information that can be transformed into quantifiable data for scientific analysis.

272. (B) Direct, spoken interaction with the participant.
This data collection method is highly valued for its ability to provide nuanced and detailed insights. Through verbal exchange, researchers can probe deeper into specific topics, ask follow-up questions, and clarify any ambiguous responses from the participant. This personal interaction facilitates a more comprehensive understanding of the subject matter than what can typically be achieved through written or purely observational methods.

273. (D) Note-taking and critical reading.
Critically engaging with existing research requires more than just finding relevant sources. It demands the ability to analyze and synthesize information while documenting key insights in a systematic manner. These twin skills allow a researcher to evaluate the quality of previous studies and integrate that knowledge into their own work, ensuring the new study is well-situated within the scientific field.

274. (A) Personal book collections.
A comprehensive search for existing literature involves accessing various scholarly platforms to find high-quality information. Common locations for these searches include physical libraries, specialized digital databases, and internet search engines that lead to peer-reviewed journals. Utilizing these professional resources ensures that the research is grounded in validated, peer-reviewed knowledge rather than non-scholarly sources that may not meet standards.

275. (C) To analyze, evaluate, and synthesize information to contextualize new research.
Engaging deeply with academic literature allows researchers to go beyond simple information gathering. This evaluative process involves dissecting previous findings to understand their strengths and limitations. By synthesizing various viewpoints and data points, the researcher can establish a clear context for their own study. This step is crucial for demonstrating how the new investigation fills existing gaps in knowledge.

276. (A) Every individual has a known, non-zero chance of being selected.
This method of participant selection is defined by the mathematical certainty that every member of the target population could potentially be included. This known probability is essential for creating a sample that accurately reflects the larger group. By ensuring that no specific individual is excluded by design, the researcher can minimize selection bias and improve the reliability of the study findings.

277. (D) It is based on the principles of randomization, minimizing bias.
Randomization is the key mechanism used to ensure that a sample is truly representative of its parent population. This approach removes human judgment from the selection process, thereby preventing systematic errors and biases from influencing the results. Because it relies on chance, it provides the most robust foundation for making accurate statistical inferences that can be applied to much broader groups.

278. (B) The findings cannot be reliably generalized to the population.
While useful for certain types of preliminary study, some selection methods lack the

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it is impossible to calculate the probability of selection. This limits the representativeness of the sample and the ability of the researcher to generalize their findings to the larger population. Non-probability sampling is typically used for exploratory or qualitative research where representativeness is less critical.

247. (D) Nominal
Nominal measurement is the most fundamental level of data classification, where information is placed into distinct, mutually exclusive categories with no inherent numerical order. For example, categorizing participants by their favorite sport simply serves to identify and distinguish the groups. Because these labels do not possess any mathematical value or rank, nominal data cannot be used for complex calculations like means or standard deviations. Understanding this level of measurement is essential for selecting the correct non-parametric statistical tests for data analysis.

248. (A) The spread or dispersion of data points around the mean.
The standard deviation is a fundamental measure of dispersion that indicates how much the individual scores in a data set spread out around the central mean. A low standard deviation suggests that scores are clustered closely to the mean, while a high value indicates greater variability among the participants. Understanding this spread is essential for researchers to assess the consistency and reliability of their results. Along with measures of central tendency, standard deviation provides a complete picture of the data's overall distribution.

249. (A) Both A and R are true and R is the correct explanation of A.
The widespread use of statistical software packages like SPSS has significantly improved the efficiency of research by automating the computational process. These tools can perform a vast range of complex calculations quickly and accurately, which greatly reduces the likelihood of human error that can occur with manual calculations. Therefore, the ability of these packages to provide reliable and rapid results directly explains why they have become an essential part of the modern research process, facilitating more robust data analysis and interpretation.

250. (A) To disseminate the knowledge gained from the research.
The ultimate goal of every stage of the reporting process, from the abstract to the final published paper, is to disseminate the new knowledge gained from research to the wider community. By sharing findings through professional channels, researchers ensure that their work contributes to the collective body of scientific evidence. This dissemination allows others to learn from the results, improve their own practices, and build upon the discoveries, which is essential for the continuous progress and advancement of physical education.

251. (B) To generate a body of knowledge that improves practice and standards.
Scientific advancement in physical education relies on a robust foundation of evidence-based insights. This systematic inquiry serves to validate existing professional practices while simultaneously driving the innovation of new pedagogical methodologies. By building a comprehensive body of specialized knowledge, practitioners can effectively enhance athletic performance, promote public health, and maintain high professional standards within the academic field.

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252. (A) A stringent framework of ethical considerations.
The systematic pursuit of scientific knowledge is not unrestricted and must operate within specific boundaries. Researchers are required to navigate a complex framework of moral guidelines designed to safeguard human subjects. These constraints prioritize participant dignity and rights, ensuring that the quest for discovery does not override the fundamental welfare and safety of involved individuals throughout the entire investigation.

253. (C) The process of obtaining informed consent from participants.
Ethical research necessitates protecting the autonomy and rights of those involved in scientific investigations. A primary requirement in this process involves ensuring that participants are fully aware of the study's nature and voluntarily agree to take part. This procedural step is fundamental to maintaining professional

287. (C) Descriptive and inferential.
Analytical methods in research serve two distinct yet complementary roles. The first focuses on summarizing and characterizing the specific features of a data set to provide a clear profile. The second involves using sample data to make broader predictions or generalizations about an entire population. Together, these approaches allow researchers to both understand their current subjects and extend those insights to larger populations.

288. (B) Descriptive use.
When researchers aim to portray the basic characteristics of their participants, they employ methods that summarize the data. Calculating measures like the mean or standard deviation provides a clear snapshot of the group's performance or attributes. This approach is essential for organizing raw figures into a manageable format that highlights the central tendencies and variability without making claims about a larger population.

289. (D) To make inferences about a population from a sample.
Advanced analytical techniques enable researchers to look beyond the immediate participants in a study. By applying specific statistical tests to a representative subset, scientists can estimate the characteristics of the much larger group from which the sample was drawn. This process is vital for testing hypotheses and determining the extent to which the research findings can be applied to real-world scenarios.

290. (A) Statistically significant or likely due to chance.
Evaluating research predictions requires determining whether the observed relationships or differences are meaningful. Researchers use specific procedures to assess if the results are strong enough to suggest a real effect or if they could have simply occurred by random accident. This objective assessment provides the necessary confidence level to support or reject a hypothesis, ensuring the findings are always scientifically credible.

291. (C) The characteristics of the data.
Selecting the appropriate analytical technique is a critical decision that depends on the nature of the information collected. Researchers must evaluate whether their findings meet specific requirements, such as following a certain distribution or using a particular measurement level. These inherent properties of the data set guide the analyst toward the most valid and reliable method for testing hypotheses and drawing conclusions.

292. (A) The data must be from a population with a normal distribution.
Certain high-powered analytical methods require that the underlying data follow a specific mathematical pattern. The most common requirement is that the sample comes from a group where values are distributed symmetrically around a central mean. If the data deviate significantly from this bell-shaped curve, these specific techniques may produce inaccurate results, necessitating the use of alternative, more flexible analytical approaches.

293. (D) Because they do not require the data to follow a specific distribution like the normal curve.
Some analytical tests are designed to be used without the strict requirement that data must conform to a bell-shaped pattern. These flexible methods allow researchers to analyze various types of information, including categorical or ranked data, without worrying about the underlying population spread. This versatility makes them essential for situations where the assumptions for more rigid, high-powered tests cannot be met easily.

294. (B) When the data are not normally distributed or are ranked.
Researchers often encounter data that does not fit the strict requirements of standard high-powered tests. This might happen when results are highly skewed or consist of rankings rather than continuous measurements. In such cases, more flexible analytical tools are utilized because they do not rely on assumptions about population distribution. This ensures that a valid analysis can still be performed effectively.

295. (C) More powerful but require stricter assumptions.
While some analytical methods are better at detecting true relationships between variables, their application is limited by specific criteria.

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2. Essays are easier to score objectively.
3. Balance is needed.
4. Validity depends on coverage.

(A) 1, 2, and 3
(B) 1, 3, and 4
(C) 2 and 4 only
(D) 1 and 2 only

53. Which of the following best describes the importance of 'evaluation' in physical education and sports?
(A) Assisting teachers in grading and ranking students within a group.
(B) Measuring the physical and athletic performance levels of athletes.
(C) Facilitating program improvement, motivation, and goal assessment.
(D) Serving as an optional and supplementary activity for sports coaches.

54. The measurement of 'biacromial diameter' is an anthropometric assessment of:
(A) Chest depth
(B) Shoulder width
(C) Hip width
(D) Leg length

55. In the Heath-Carter method of somatotyping, which component represents muscularity?
(A) Endomorphy
(B) Ectomorphy
(C) Androgyny
(D) Mesomorphy

56. Testing for 'team cohesion' is a part of which domain of measurement?
(A) Psychological
(B) Physiological
(C) Anthropometric
(D) Biomechanical

57. Arrange logically:
1. Administering,
2. Interpreting,
3. Selecting,
4. Collecting.

(A) 3, 1, 4, 2
(B) 1, 3, 4, 2
(C) 3, 4, 1, 2
(D) 4, 1, 2, 3

58. What is a primary limitation of using Body Mass Index (BMI) as a measure of body composition?
(A) It does not differentiate between fat mass and muscle mass.
(B) It is difficult and expensive to calculate.
(C) It requires specialized laboratory equipment.
(D) It is only accurate for children and adolescents.

59. The AAHPERD Health-Related Physical Fitness Test includes all EXCEPT:
(A) 1-mile run/walk
(B) Sit-ups
(C) Sit-and-reach
(D) 50-yard dash

60. Which of the following is a test for anaerobic power and speed?
(A) Cooper 12-minute run
(B) 40-yard dash
(C) Harvard Step Test
(D) Beep Test

61. Which postural deviation is characterized by a lateral or sideways curvature of the spine?
(A) Kyphosis
(B) Lordosis
(C) Scoliosis
(D) Flat Back

62. Match List I (Measurement) with List II (Instrument):
P. Weight,
Q. Skinfold,
R. Circumference,
S. Diameter

List II :
1. Anthropometer,
2. Gulick Tape,
3. Harpenden,
4. Scale

(A) P-4, Q-3, R-2, S-1
(B) P-3, Q-4, R-1, S-2
(C) P-4, Q-2, R-3, S-1
(D) P-1, Q-3, R-2, S-4

63. Which principle states that a test should be relevant and specific to the sport or component being assessed?
(A) Principle of Specificity
(B) Principle of Reliability

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CHAPTER 09

Test, Measurement, and Evaluation

1. Which of the following best defines 'measurement' in the context of physical education?
(A) The process of making judgments about the quality of a performance.
(B) The process of assigning a numerical or quantitative value to an attribute.
(C) The administration of a specific instrument to gather information.
(D) The final interpretation of scores against a set standard.

2. In the process of evaluation, what is the role of a 'test'?
(A) To act as an instrument or tool for collecting data.
(B) To provide a final judgment on an athlete's worth.
(C) To be the sole basis for grading students.
(D) To create a qualitative summary of performance.

3. Given below are two statements:
Statement I : Evaluation is a qualitative process that involves value judgment.
Statement II : Measurement is a quantitative process that is objective and free from judgment.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

4. A coach assessing a basketball player's shooting form by observing them is an example of which type of evaluation?
(A) Formative evaluation
(B) Summative evaluation
(C) Objective evaluation
(D) Subjective evaluation

5. Match the items in List I with the items in List II.
List I (Concept):
P. Test,
Q. Measurement,
R. Evaluation,
S. Formative Evaluation
List II (Description):
1. Judging the merit of performance,
2. Instrument to collect data,
3. Assigning a numerical score,
4. Ongoing assessment for feedback
(A) P-2, Q-3, R-1, S-4
(B) P-3, Q-2, R-4, S-1
(C) P-2, Q-1, R-3, S-4
(D) P-4, Q-3, R-1, S-2

6. Which of the following is NOT a primary purpose of evaluation in physical education?
(A) To determine the achievement of objectives.
(B) To guarantee athletic scholarships for all participants.
(C) To motivate participants for better performance.
(D) To diagnose weaknesses and strengths.

7. The principle of evaluation that ensures a test produces consistent results over repeated administrations is called:
(A) Validity
(B) Objectivity
(C) Feasibility
(D) Reliability

8. When a student's performance is compared with the performance of other students in a group, this process is known as:
(A) Norm-referenced evaluation
(B) Criterion-referenced evaluation
(C) Self-referenced evaluation
(D) Formative evaluation

9. Which of the following is the most appropriate first step in administering a testing programme?
(A) Procuring and preparing necessary equipment for the testing site.
(B) Recording and documenting performance scores immediately after the trial.

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(B) Height and sitting-height
(C) Weight and skinfold thickness
(D) Weight and waist circumference

32. Consider the following anthropometric landmarks:
1. Acromion,
2. Iliocristale,
3. Radiale,
4. Tibiale Mediale.

(A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 3 and 4 only
(D) 1, 2, 3, and 4

33. The measurement of 'sitting-height' is taken to assess:
(A) The length of the lower limbs relative to the trunk.
(B) The proportion of trunk length to total standing height.
(C) The total height of an individual in a seated position.
(D) The flexibility of the spine.

34. A Harpenden caliper is a specialized instrument used for measuring:
(A) Skinfold thickness
(B) Body weight
(C) Bone diameters
(D) Circumferences

35. The Ponderal Index is an indicator of body build and is calculated using:
(A) Weight and circumference
(B) Skinfold and diameter
(C) Height and weight
(D) Height and sitting-height

36. In the context of somatotyping, the term 'ectomorph' describes a physique characterized by:
(A) Muscularity and a hard, rectangular body shape.
(B) Roundness, softness, and a high proportion of fat.
(C) A balanced physique with equal components of all types.
(D) Linearity, fragility, and a lean body.

37. Consider the following statements about posture:
1. Plumb line is a tool.
2. Kyphosis is thoracic.
3. NY Chart is subjective.
4. Lordosis is lumbar.
5. Posture is only genetic.

(A) 1, 2 and 3 only
(B) 1, 2, 4 and 5 only
(C) 1, 2, 3 and 4 only
(D) 2, 3 and 5 only

38. A sphygmomanometer is the standard instrument used to measure:
(A) Heart rate
(B) Blood pressure
(C) Breathing frequency
(D) Vital capacity

39. 'Vital capacity' refers to the maximum amount of air a person can:
(A) Inhale after a normal inspiration.
(B) Hold in their lungs at any given time.
(C) Exchange during normal, quiet breathing.
(D) Exhale after a maximal inspiration.

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40. Which instrument is used to measure vital capacity?
(A) Spirometer
(B) Stethoscope
(C) Thermometer
(D) Ergometer

41. Which of the following is NOT a direct method of testing a psychological variable?
(A) Administering the State-Trait Anxiety Inventory (STAI).
(B) Using the Group Environment Questionnaire (GEQ) to assess team cohesion.
(C) Observing an athlete's body language before a competition.
(D) Using a standardized questionnaire for achievement motivation.

42. Match the items in List I with the items in List II.

List I :
P. Anxiety,
Q. Aggression,
R. Team Cohesion,
S. Mental Toughness

4. Establishing norms,
5. Preparing instructions.

(A) 2, 5, 3, 1, 4
(B) 1, 2, 3, 4, 5
(C) 2, 3, 5, 4, 1
(D) 5, 2, 1, 3, 4

21. The ability of the body to change direction quickly and efficiently while maintaining balance is known as:
(A) Speed
(B) Power
(C) Agility
(D) Endurance

22. Match the items in List I with the items in List II.
List I (Component):
P. Strength,
Q. Speed,
R. Flexibility,
S. Coordinative Ability
List II (Test):
1. Sit-and-reach,
2. Shuttle run,
3. 50-meter dash,
4. Handgrip dynamometer

(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-1, S-2
(C) P-3, Q-4, R-2, S-1
(D) P-4, Q-1, R-3, S-2

23. Which of the following is NOT a test for coordinative abilities?
(A) Shuttle run
(B) Plate tapping test
(C) Wall toss test
(D) Vertical jump test

24. The Russell-Lange Volleyball Skill Test is designed to assess which specific skill?
(A) Serving ability
(B) Passing accuracy
(C) Setting ability
(D) Spiking power

25. Consider the following statements regarding badminton skill tests:
1. French-Stalter measures short serve.
2. Miller Wall Volley measures rally ability.
3. Rackets/shuttles are required.
4. Scott-Fox assesses long serve accuracy.
5. AAHPERD has no badminton test.

(A) 1, 2 and 3 only
(B) 2, 3 and 4 only
(C) 1, 3, 4 and 5 only
(D) 1, 2, 3 and 4 only

26. In basketball, the Johnson Basketball Test includes items to measure all the following skills EXCEPT:
(A) Defensive movement
(B) Field-goal speed test
(C) Dribbling
(D) Passing

27. Given below are two statements:
Assertion (A) : Anthropometric measurements are crucial in talent identification.
Reason (R) : Body size and composition influence suitability for particular sports.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

28. What does the McDonald Soccer Test primarily measure?
(A) Specifically assessing dribbling skill.
(B) Evaluating general soccer playing ability.
(C) Measuring kicking for maximum distance.
(D) Testing heading accuracy and control.

29. Which of the following is a recognized skill test for field hockey?
(A) Dyer Tennis Test
(B) Brady Volleyball Test
(C) Schmithals-French Field Hockey Test
(D) Johnson Basketball Test

30. The Dyer Backboard Test is a popular method for evaluating skill in which sport?
(A) Volleyball
(B) Basketball
(C) Handball
(D) Tennis

31. Body Mass Index (BMI) is calculated using which two anthropometric measurements?
(A) Height and weight

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(C) Explaining test purposes and procedures clearly to all participants.
(D) Organizing and conducting a light warm-up session before the test.

10. Given below are two statements:
Assertion (A) : For a test to be useful in physical education, it must be valid.
Reason (R) : Validity ensures that the test accurately measures the specific attribute it is designed to measure.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

11. Which term refers to the degree of agreement between two or more competent judges about the value of a measurement?
(A) Reliability
(B) Subjectivity
(C) Specificity
(D) Objectivity

12. A test designed to measure cardiovascular endurance should not be heavily influenced by muscular strength. This relates to which criterion of test selection?
(A) Reliability
(B) Validity
(C) Administrative feasibility
(D) Specificity

13. What is the key characteristic of a "standardized test"?
(A) It is created by a local physical education teacher for a specific class.
(B) It can be modified freely by the test administrator to suit the conditions.
(C) It has fixed procedures for administration and scoring, and established norms.
(D) It exclusively measures subjective qualities like sportsmanship.

14. Which of the following is primarily a test of motor educability?
(A) Cooper's 12-minute run/walk test
(B) Sit and Reach Test
(C) Harvard Step Test
(D) Iowa-Brace Test

15. Consider the following statements regarding evaluation:
1. It begins with clear objectives.
2. It is terminal only.
3. It relies only on objective data.
4. It involves value judgment.
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 2, and 3 only
(D) 1, 3, and 4 only

16. Health-related fitness primarily includes components that:
(A) focus on factors required for achieving high-level competitive performance.
(B) promote overall wellness and the prevention of hypokinetic diseases.
(C) enhance physical appearance and the aesthetic symmetry of the body.
(D) prioritize complex motor skills like agility, speed, and coordination.

17. Which of the following is a test for measuring muscular strength?
(A) 50-yard dash
(B) 1-Repetition Maximum (1-RM) test
(C) Sit and reach test
(D) Shuttle run test

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18. The Harvard Step Test is designed to measure which component of fitness?
(A) Cardiovascular endurance
(B) Muscular strength
(C) Flexibility
(D) Agility

19. Which test is commonly used to assess the flexibility of the lower back and hamstring muscles?
(A) Vertical jump test
(B) Pull-ups
(C) Sit-and-reach test
(D) Shuttle run

20. Arrange the following steps in constructing a standard skill test in chronological order:
1. Item analysis,
2. Defining the skill,
3. Administering trial test,

List II :
1. GEQ,
2. SCAT,
3. Coping with pressure,
4. Buss-Durkee Inventory

(A) P-1, Q-3, R-4, S-2
(B) P-2, Q-4, R-1, S-3
(C) P-2, Q-1, R-3, S-4
(D) P-3, Q-4, R-2, S-1

43. An individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments is known as:
(A) Achievement motivation
(B) Mental toughness
(C) Trait anxiety
(D) Self-efficacy

44. Given below are two statements:
Statement I : Formative evaluation is conducted during instruction.
Statement II : Summative evaluation is conducted at the end of instruction.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

45. Consider the following fitness components:
1. Cardiorespiratory endurance,
2. Muscular strength,
3. Agility,
4. Body composition,
5. Speed.

(A) 1, 2 and 3 only
(B) 1, 2 and 4 only
(C) 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

46. What is the fundamental difference between 'motor fitness' and 'physical fitness'?
(A) Motor fitness is a broader term that includes physical fitness.
(B) There is no difference; the terms are used interchangeably.
(C) Motor fitness relates to the nervous system, while physical fitness relates to the muscular system.
(D) Physical fitness is primarily health-related, while motor fitness is primarily performance-related.

47. Given below are two statements:
Assertion (A) : Skinfold measurements estimate body composition.
Reason (R) : Subcutaneous fat thickness is proportional to total body fat.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

48. Which of the following is an example of a 'criterion-referenced' test?
(A) A test where only the top 10% of students receive an 'A' grade.
(B) A driving test where a person must demonstrate specific maneuvers to pass.
(C) The SAT exam, where scores are compared against a national average.
(D) A long jump competition where the final rank is based on distance.

49. Which of the following correctly identifies an 'incorrect' pair?
(A) McDonald Soccer Test - Football
(B) Iowa-Brace Test - Volleyball
(C) AAHPERD Basketball Skill Test - Basketball
(D) Dyer Backboard Test - Tennis

50. The process of developing norms for a standardized test involves:
(A) Administering the test to a large, representative sample population.
(B) Having a panel of experts rate the difficulty of each test item.
(C) Asking participants for their opinion on the test's fairness.
(D) Comparing the test results with an existing, similar test.

51. "The innate or acquired capacity of an individual for skilled motor performance" is the definition of:
(A) Motor fitness
(B) Motor educability
(C) Motor ability
(D) Physical fitness

52. Regarding knowledge tests:
1. Items include MCQ/TF/Matching.

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long training sessions.
(D) Achieving consistent high-level performance under pressure or adversity.

76. The Ponderal Index is calculated using:
(A) Weight (kg) / Height $(m)^2$
(B) Height (cm) / $(\text{Weight (kg)})^{(1/3)}$
(C) Weight (kg) × Height (m)
(D) Waist (cm) / Hip (cm)

77. Regarding knowledge test construction:
1. Planning,
2. Writing items,
3. Try-out,
4. Item analysis,
5. Final preparation.
(A) 1, 2 and 5 only
(B) 2, 3 and 4 only
(C) 1, 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

78. The ability to learn new motor skills easily is referred to as:
(A) Motor fitness
(B) Motor ability
(C) Motor memory
(D) Motor educability

79. Which of the following is NOT a common site for measuring skinfold thickness?
(A) Forehead
(B) Triceps
(C) Subscapular
(D) Suprailiac

80. A test is considered to have 'face validity' if:
(A) Correlating highly with a gold standard criterion measurement tool.
(B) Appearing to measure the intended variable to participants and observers.
(C) Producing consistent and stable scores across repeated test trials.
(D) Allowing different testers to obtain the same results when scoring.

81. The Broer-Miller Tennis Test is designed to assess:
(A) Serving speed.
(B) Forehand and backhand drive power and accuracy.
(C) Volleying skill against a wall.
(D) General tennis playing ability in a game situation.

82. Match List I (Sport) with List II (Test):
P. Basketball,
Q. Volleyball,
R. Football,
S. Hockey
List II :
1. McDonald,
2. Johnson,
3. Harbans Singh,
4. Russell-Lange
(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-1, S-3
(C) P-2, Q-1, R-4, S-3
(D) P-3, Q-4, R-1, S-2

83. What is measured by taking the circumference of the flexed upper arm?
(A) Body fat percentage
(B) Bone diameter
(C) Muscular development
(D) Skin elasticity

84. 'Trait Anxiety' as a psychological variable refers to:
(A) A temporary emotional state of nervousness in a specific situation.
(B) The anxiety felt immediately after a competition ends.
(C) A physiological response like increased heart rate.
(D) A stable personality characteristic or predisposition to be anxious.

85. Which statements are incorrect?
1. Test is measurement.
2. Measurement is prerequisite for evaluation.
3. Evaluation is always quantitative.
4. Test score is measurement.
5. Norms compare to standards of mastery.
(A) 3 and 5 only
(B) 1 and 2 only
(C) 3, 4, and 5 only
(D) 1 and 4 only

86. Which type of test construction involves questions with only one correct answer?
(A) Subjective test
(B) Objective test

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(C) Principle of Objectivity
(D) Principle of Feasibility

64. 'Breathing frequency' is typically measured as:
(A) The volume of air inhaled per minute.
(B) The number of breaths taken per minute.
(C) The ratio of inhalation time to exhalation time.
(D) The maximum pressure generated by respiratory muscles.

65. A teacher wants to assess serving accuracy. Which test is best?
(A) Knowledge test on rules.
(B) Skill test with specific targets.
(C) Motor ability test like vertical jump.
(D) Fitness test like 12-minute run.

66. In the context of psychological variables, 'achievement motivation' refers to an individual's:
(A) Tendency to strive for success and persist in the face of failure.
(B) Fear of performing in front of an audience.
(C) Ability to get along with teammates.
(D) Inclination towards aggressive behavior during competition.

67. Given below are two statements:
Assertion (A) : Standardized procedures must be followed strictly.
Reason (R) : Deviation affects reliability and validity, making comparisons meaningless.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

68. The "normal" range for resting heart rate in a healthy adult is typically:
(A) 40-60 beats per minute
(B) 100-120 beats per minute
(C) 120-150 beats per minute
(D) 60-100 beats per minute

69. What is the primary advantage of a 'teacher-made' test over a 'standardized test'?
(A) It has established national norms.
(B) It is always more reliable and objective.
(C) It is generally more valid for a specific group of students and curriculum.
(D) It requires no expertise to construct.

70. Which of the following is considered a test for agility in football?
(A) Kicking for distance
(B) Illinois Agility Run
(C) Heading for accuracy
(D) Wall volley test

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71. When selecting a test, 'administrative feasibility' refers to:
(A) The test's correlation with future performance.
(B) The consistency of the test scores.
(C) The scientific basis of the test construction.
(D) The cost, time, and equipment required for the test.

72. Which matches are correct?
1. Strength (max force),
2. Endurance (sustain),
3. Speed (move quick),
4. Flexibility (change direction).

(A) 1, 2, and 3
(B) 1, 2, and 4
(C) 2, 3, and 4
(D) 1 and 3 only

73. The difference between systolic and diastolic blood pressure is known as:
(A) Mean arterial pressure
(B) Resting blood pressure
(C) Pulse pressure
(D) Exercise blood pressure

74. A badminton skill test hitting to corners is primarily assessing:
(A) Accuracy and placement
(B) Power and speed
(C) Endurance
(D) Hand-eye coordination only

75. Mental toughness in athletes is best described as:
(A) Maintaining a lack of emotional response during critical situations.
(B) Possessing a natural biological predisposition for specific sports.
(C) Demonstrating physical strength to endure

These techniques offer greater sensitivity in analysis but can only be used when the data follow a normal distribution and meet other rigorous requirements. Researchers must weigh this increased effectiveness against the necessity of fulfilling the strict foundational assumptions required by these tests.

296. (D) To perform complex data analyses efficiently.
Specialized software has become an essential component of the modern scientific process. These digital tools allow researchers to execute intricate mathematical calculations with a speed and accuracy that manual methods cannot match. By automating these processes, researchers can handle large datasets and perform advanced tests, ensuring that the results are reliable and the analysis phase of the study is streamlined.

297. (A) A research proposal.
Before beginning a study, researchers must create a detailed document that outlines their intended methodology and goals. This forward-looking plan serves as a blueprint for the entire project, describing the problem to be solved and the steps that will be taken. It is essential for obtaining approval and funding, ensuring that the study is well-conceived before any data collection begins.

298. (B) To be delivered orally at a conference.
Disseminating scientific findings often involves sharing results with a live audience of peers. For this purpose, researchers prepare a document specifically tailored for verbal delivery, typically accompanied by visual aids. This format allows for immediate interaction, questions, and discussion within the professional community. It differs from a written publication by focusing on a concise, engaging presentation of the study's most significant aspects.

299. (B) Video conferencing software.
Various digital tools are used to facilitate different stages of the inquiry process. These include communication platforms like email, search engines for identifying literature, and statistical packages for data analysis. Standard office software is also used for writing reports and creating presentations. While other technologies exist, these specific applications are explicitly highlighted for their vital roles in managing, analyzing, and presenting scientific work.

300. (A) The report is a comprehensive account, while the abstract is a concise summary.
Scientific dissemination involves different levels of detail depending on the document's purpose. One format provides an exhaustive and thorough description of every aspect of the research process and results. In contrast, the other offers a brief overview that highlights the essential findings and conclusions. Both are necessary for effectively communicating the work to different audiences and for archival or indexing purposes.

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(C) Essay test
(D) Projective test

87. Given below are two statements:
Assertion (A) : Somatotyping classifies human physique.
Reason (R) : Different body types are associated with success in different sports.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

88. Feedback given during a gymnastic routine to help improvement is an example of:
(A) Formative evaluation
(B) Summative evaluation
(C) Norm-referenced evaluation
(D) Diagnostic evaluation

89. A "land mark" in anthropometry refers to:
(A) A geographical location where a test was developed.
(B) A score that indicates a high level of achievement.
(C) A specific, identifiable point on the skeleton used as a reference for measurement.
(D) The average measurement for a specific population.

90. What is the standard unit of measurement for body temperature?
(A) Degrees Celsius or Fahrenheit
(B) Beats per minute
(C) Millimeters of mercury (mmHg)
(D) Liters per minute

91. The Sport Competition Anxiety Test (SCAT) is designed to measure:
(A) State anxiety
(B) Aggression
(C) Team cohesion
(D) Competitive trait anxiety

92. Which are examples of muscular endurance tests?
1. Push-ups to failure,
2. Flexed-arm hang,
3. 1-RM press,
4. Sit-ups (1 min).
(A) 1 and 3 only
(B) 2 and 3 only
(C) 1, 2, and 4
(D) 3 and 4 only

93. The calculation for Body Mass Index (BMI) is:
(A) Weight (in lbs) / [Height (in inches)]^2
(B) Height (in cm) / Weight (in kg)
(C) Weight (in kg) / [Height (in m)]^2
(D) Weight (in kg) / Height (in cm)

94. What is the primary difference between 'heart rate' and 'pulse rate'?
(A) Pulse rate is always higher than heart rate.
(B) Heart rate is measured at the wrist, and pulse rate is measured at the chest.
(C) There is no fundamental difference; the terms are identical.
(D) Heart rate is measured electrically (ECG), while pulse rate is the mechanical palpation of an artery.

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95. In the context of skill test construction, establishing 'validity' means:
(A) Proving the test measures the specific skill it claims to measure.
(B) Ensuring the test can be administered easily.
(C) Making sure the test gives consistent results.
(D) Developing a set of norms for comparison.

96. Which of the following is an example of a 'subjective' evaluation?
(A) Timing a 100m sprint with a stopwatch.
(B) A gymnastics judge awarding points for artistry and form.
(C) Measuring the height of a high jump bar.
(D) Counting the number of successful free throws.

97. Arrange tests chronologically by skill progression:
1. Basic catch/throw,
2. McDonald Soccer,
3. Tactical gameplay,
4. AAHPERD Basketball.
(A) 1, 4, 2, 3
(B) 1, 2, 4, 3
(C) 4, 2, 1, 3
(D) 2, 1, 3, 4

146. Which instrument measures knee range of motion?
(A) A goniometer
(B) A flexometer
(C) A measuring tape
(D) A plumb line

147. Given below are two statements:
Assertion (A) : In norm-referenced evaluation, scores are compared to peers.
Reason (R) : The purpose is to determine rank within a defined group.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

148. Rounded shoulders and forward head position indicate:
(A) Lordosis
(B) Scoliosis
(C) Genu Varum
(D) Kyphosis

149. Ability to maintain equilibrium stationary/ moving is:
(A) Coordination
(B) Agility
(C) Balance
(D) Reaction time

150. A key step in evaluation is:
(A) Ignoring the objectives of the program.
(B) Collecting data through measurement.
(C) Avoiding any form of judgment.
(D) Using only one source of information.

151. Which is a 'motor ability'?
(A) Throwing a baseball
(B) Kicking a soccer ball
(C) Serving in tennis
(D) Reaction time

152. Primarily measure 'power':
1. Vertical Jump,
2. Broad Jump,
3. 50m dash,
4. Medicine Ball Throw.

(A) 1 and 2 only
(B) 3 and 4 only
(C) 1, 2, and 4
(D) 2, 3, and 4

153. High achievement motivation indicates:
(A) Avoids challenging tasks.
(B) Is easily discouraged by failure.
(C) Has a strong desire to succeed in competition.
(D) Prefers to work alone rather than in a team.

154. Primary purpose of French-Stalter Badminton Test?
(A) To assess the accuracy of the short serve.
(B) To measure a player's ability in a game-like situation.
(C) To evaluate the speed of the smash.
(D) To test the player's general badminton knowledge.

155. Example of 'summative' evaluation?
(A) A coach giving a player tips during a timeout.
(B) A peer review of a practice performance.
(C) A pre-test given at the beginning of a course.
(D) A teacher grading a final project at the end of a unit.

156. Heath-Carter somatotyping provides three numerals for:
(A) Height, Weight, and BMI
(B) Endomorphy, Mesomorphy, and Ectomorphy
(C) Strength, Speed, and Endurance
(D) Anxiety, Aggression, and Cohesion

157. Important for selecting tests:
1. Validity,
2. Reliability,
3. Objectivity,
4. Feasibility,
5. Popularity.

(A) 1, 2, 3 and 4
(B) 1, 2 and 5 only
(C) 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

158. The 'beep test' estimates:
(A) Maximum running speed
(B) Leg power
(C) Agility
(D) Maximum aerobic capacity (VO_2 max)

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(D) Evaluating the psychological and emotional profile of the athlete.

109. Which of the following is NOT a criterion for selecting a good test?
(A) Validity
(B) Reliability
(C) Complexity
(D) Objectivity

110. Which statement regarding the measurement of 'body composition' is incorrect?
(A) It refers to the relative percentage of fat, bone, and muscle in the body.
(B) Skinfold measurement is an indirect method.
(C) Hydrostatic (underwater) weighing is considered a gold standard.
(D) Body Mass Index (BMI) is the most accurate method for determining body composition.

111. The Miller Wall Volley test in badminton is primarily a test of:
(A) The ability to sustain a rally and hand-eye coordination.
(B) The accuracy of the long serve.
(C) The speed and control of the smash.
(D) The player's court movement and agility.

112. Regarding anthropometry:
1. Non-invasive,
2. Used to study size/shape,
3. Sitting height used for leg length estimation,
4. Standardized on left side.
(A) 1 and 4 only
(B) 1, 2, and 3
(C) 2 and 4 only
(D) 1, 2, 3, and 4

113. Drive for inherent enjoyment of a behavior is:
(A) Extrinsic motivation
(B) Intrinsic motivation
(C) Achievement motivation
(D) Self-efficacy

114. Consistency of scores on two different occasions is:
(A) Test-retest reliability
(B) Inter-rater reliability
(C) Content validity
(D) Predictive validity

115. Diastolic blood pressure represents the pressure in the arteries when:
(A) The heart contracts to pump blood.
(B) The person is running.
(C) The ventricles are relaxing and refilling with blood.
(D) The atria are contracting.

116. The Illinois Agility Test measures:
(A) Static balance
(B) Flexibility
(C) Muscular endurance
(D) Agility

117. Evaluation principles:
1. Clear objectives,
2. Continuous/comprehensive,
3. Cooperative process,
4. For improvement,
5. Only standardized tests.
(A) 1, 2, 3 and 4
(B) 1, 2 and 5 only
(C) 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

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118. In Sheldon's system, 1-7-1 is predominantly:
(A) Endomorphic
(B) Mesomorphic
(C) Ectomorphic
(D) Balanced

119. A 'plumb line' is used in posture evaluation to:
(A) Measure the curvature of the spine in degrees.
(B) Test the flexibility of the back muscles.
(C) Determine the center of mass of the body.
(D) Assess the alignment of body segments against a line of gravity.

120. Which of the following measures dynamic strength or power?
(A) Vertical jump test
(B) Handgrip dynamometry
(C) Sit-and-reach test
(D) Plank hold for time

121. Analyzing individual questions for difficulty and discrimination is:
(A) Test validation
(B) Norm referencing
(C) Item analysis

171. Least appropriate for sedentary elderly?
(A) Chair stand test
(B) Arm curl test with light weights
(C) 6-minute walk test
(D) Cooper's 12-minute run test

172. Correct physiological statements:
1. BP is systolic/diastolic.
2. VC increases throughout adulthood.
3. Resting HR decreases with fitness.
4. Temperature is stable during exercise.
(A) 1 and 3
(B) 2 and 4
(C) 1, 2, and 3
(D) 1 and 4

173. Primary goal of posture evaluation?
(A) Rank individuals based on their appearance.
(B) Measure an individual's flexibility.
(C) Identify deviations from normal body alignment for potential correction.
(D) Assess an individual's somatotype.

174. Key characteristic of 'motor fitness'?
(A) It is directly related to the prevention of hypokinetic diseases.
(B) Its main components are cardiorespiratory endurance and body composition.
(C) It is synonymous with overall health.
(D) It is crucial for high-level performance in sports and physical activities.

175. The General Self-Efficacy Scale (GSE) is designed for:
(A) Assessing general belief in the ability to cope with challenges.
(B) Measuring the level of anxiety during highly competitive trials.
(C) Evaluating the internal cohesion within a professional sports team.
(D) Tracking an individual's specific motivation to achieve set goals.

176. Which is an example of 'measurement'?
(A) Stating that a student's performance was 'excellent'.
(B) Recording a long jump distance of 5.2 meters.
(C) Deciding to move a student to an advanced group.
(D) Concluding that the training program was effective.

177. Chronological evolution of fitness testing:
1. Health-related,
2. Motor/performance,
3. Military-style calisthenics.
(A) 1, 2, 3
(B) 3, 1, 2
(C) 2, 3, 1
(D) 3, 2, 1

178. A 'Gulick tape' ensures:
(A) Consistent tension is applied during circumference measurements.
(B) The tape can measure very long distances.
(C) The tape does not stretch over time.
(D) The tape can measure both centimeters and inches.

179. Most valid test for dribbling, shooting, passing under pressure?
(A) A written test on the rules of basketball.
(B) A test of a single, isolated skill like free-throw shooting.
(C) A combined skill test that simulates game-like situations.
(D) A general motor ability test like the vertical jump.

180. Establishing frames of reference for interpreting scores is:
(A) Validation
(B) Evaluation
(C) Itemization
(D) Standardization

181. Endomorph characterization:
(A) Linearity and leanness
(B) Muscularity and athleticism
(C) Softness, roundness, and high relative fatness
(D) A balanced mix of all three components

182. Match List I (Test/Concept) with List II (Variable):
P. SCAT,
Q. GEQ,
R. Self-Efficacy,
S. Achievement Motivation
List II :
1. Cohesion,

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133. If a test predicts future performance, it has high:
(A) Content validity
(B) Concurrent validity
(C) Predictive validity
(D) Face validity

134. Which is NOT a direct measurement of physiological phenomenon?
(A) Using a spirometer to measure vital capacity.
(B) Using a questionnaire to assess perceived exertion.
(C) Using a thermometer to measure body temperature.
(D) Using a heart rate monitor to measure pulse rate.

135. The Brady Volleyball Test evaluates:
(A) Serve power.
(B) Spiking over net.
(C) Passing to setter.
(D) Volleying against a wall.

136. Measurement from iliac crest to iliac crest is:
(A) Bicristal diameter
(B) Biacromial diameter
(C) Chest diameter
(D) Bitrochanteric diameter

137. Sequence for Harvard Step Test:
1. Step (5 min),
2. Rest,
3. Pulse counts,
4. Calculate Index.

(A) 1, 2, 3, 4
(B) 2, 1, 3, 4
(C) 1, 3, 2, 4
(D) 4, 1, 2, 3

138. The term 'Somatotype' refers to:
(A) The classification of human body type or physique.
(B) The measurement of body fat percentage.
(C) The study of human movement.
(D) A type of postural deformity.

139. If a test is easy to score, inexpensive, and for large groups, it has high:
(A) Validity
(B) Reliability
(C) Objectivity
(D) Administrative feasibility

140. Which of these assesses cardiovascular endurance?
(A) Vertical Jump
(B) 12-minute run/walk test
(C) Sit-and-reach
(D) 1-RM Squat

141. "Motor educability" refers to the:
(A) Ability to perform a wide range of motor skills with proficiency.
(B) Physical fitness level required for athletic performance.
(C) Ability to learn new and complex motor skills quickly and easily.
(D) Knowledge of biomechanical principles.

142. Match List I (Test) with List II (Component):
List I (Test)
P. Harvard Step,
Q. Sit-and-Reach,
R. Handgrip,
S. Shuttle Run
List II :
1. Flexibility,
2. Agility,
3. Static Strength,
4. Cardiovascular Endurance

(A) P-4, Q-1, R-3, S-2
(B) P-1, Q-4, R-2, S-3
(C) P-4, Q-3, R-1, S-2
(D) P-2, Q-1, R-3, S-4

143. Which of the following is NOT a health-related component?
(A) Agility
(B) Body Composition
(C) Cardiorespiratory Fitness
(D) Muscular Strength

144. A 'table of specifications' ensures:
(A) Test-retest reliability
(B) Content validity
(C) Inter-rater objectivity
(D) Predictive validity

145. The Johnson Basketball test battery includes:
(A) A 3-point shooting contest.
(B) A field goal speed test.
(C) A defensive slide drill.
(D) A full-court game evaluation.

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(A) They measure higher-order thinking skills more effectively.
(B) They are easier to construct.
(C) They eliminate scorer bias and are highly objective.
(D) They allow for more creative and in-depth responses.

196. Repeated contractions against submaximal resistance is:
(A) Muscular strength
(B) Muscular power
(C) Muscular flexibility
(D) Muscular endurance

197. Correct administration:
1. Standard environment,
2. Clear instructions,
3. Warm-up,
4. Encouragement,
5. Score precisely.

(A) 1, 2 and 5 only
(B) 2, 3 and 4 only
(C) 1, 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

198. New York Posture Rating Chart is for:
(A) Measuring somatotype
(B) Subjective evaluation of postural alignment
(C) Testing spinal flexibility
(D) Assessing body composition

199. Primary difference between physical fitness and motor fitness?
(A) Motor fitness is a component of physical fitness.
(B) There is no difference, they are interchangeable terms.
(C) Physical fitness deals with muscles, motor fitness with nerves.
(D) Physical fitness is health-related, while motor fitness is performance-related.

200. Running between lines 10m apart in shorter intervals is:
(A) Beep Test (Multi-stage fitness test)
(B) Harvard Step Test
(C) Cooper Test
(D) 50-meter sprint

201. NOT a good reason for testing:
(A) To provide a basis for awarding grades.
(B) To assess the effectiveness of the teaching program.
(C) To create anxiety and stress among students.
(D) To motivate students by showing them their progress.

202. 'Radiale' is located at the:
(A) Head of the radius bone at the elbow
(B) Top of the shoulder
(C) Top of the hip bone
(D) Tip of the middle finger

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203. Known for assessing "motor educability":
(A) AAHPERD Youth Fitness Test
(B) Rogers' Physical Fitness Index
(C) Harvard Step Test
(D) Iowa-Brace Test

204. Most direct measure of body composition?
(A) Body Mass Index (BMI)
(B) Dual-energy X-ray absorptiometry (DEXA)
(C) Waist-to-hip ratio
(D) Skinfold thickness measurement

205. Ranking students best to worst based on 100m sprint is:
(A) Criterion-referenced
(B) Formative
(C) Norm-referenced
(D) Subjective

206. 'Achievement motivation' is concerned with:
(A) Ability to focus during a game.
(B) Belief in their own skills.
(C) Relationship with their teammates.
(D) Need to achieve success and avoid failure.

207. Anthropometric diameter measurement:
(A) Biacromial width
(B) Upper arm circumference
(C) Triceps skinfold
(D) Sitting height

208. Main purpose of McDonald Soccer Test?
(A) Assessing specific heading ability in game-like scenarios.
(B) Evaluating general soccer ability via kicking and ball control.
(C) Measuring the reaction time and effectiveness of goalkeepers.

159. Given below are two statements:
Statement I : A test can be reliable but not valid.
Statement II : A test cannot be valid if it is not reliable.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

160. Tennis test involving backboard?
(A) Broer-Miller Test
(B) Dyer Backboard Test
(C) Hewitt's Tennis Achievement Test
(D) French-Stalter Test

161. Bicristal diameter measures:
(A) Shoulder width
(B) Pelvic or hip width
(C) Chest depth
(D) Head circumference

162. Match List I (Measurement) with List II (Instrument):
P. Blood Pressure,
Q. Vital Capacity,
R. Heart Rate,
S. Temperature
List II :
1. Thermometer,
2. Stethoscope,
3. Spirometer,
4. Sphygmomanometer
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-3, S-1
(D) P-3, Q-4, R-1, S-2

163. Mental toughness excludes:
(A) High sense of self-belief
(B) Unshakable focus in the face of distraction
(C) A high level of innate athletic talent
(D) Bouncing back from performance setbacks

164. Fundamental difference between 'test' and 'evaluation'?
(A) A test is always subjective, while evaluation is always objective.
(B) 'Test' and 'evaluation' are synonymous terms.
(C) A test is administered at the end of a program, while evaluation is ongoing.
(D) A test provides data, while evaluation involves interpreting that data to make a judgment.

165. Which are incorrect?
1. Motor ability = motor skill.
2. Motor educability is learning ability.
3. Motor fitness includes speed/power.
4. Physical fitness is broader.
5. All have same ability.
(A) 1 and 5 only
(B) 2 and 3 only
(C) 1, 4 and 5 only
(D) 3 and 4 only

166. Classifying students into homogenous groups is:
(A) Motivation
(B) Classification
(C) Diagnosis
(D) Grading

167. Given below are two statements:
Assertion (A) : Skill test construction requires rigorous development.
Reason (R) : Standard tests need high reliability, validity, and norms.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

168. Triceps skinfold is taken at the:
(A) The back of the upper arm.
(B) The front of the thigh.
(C) Below the shoulder blade.
(D) The side of the abdomen.

169. Range of motion without external force is:
(A) Passive flexibility
(B) Dynamic flexibility
(C) Active flexibility
(D) Ballistic flexibility

170. Two testers getting similar results is high:
(A) Objectivity (or inter-rater reliability)
(B) Test-retest reliability
(C) Face validity
(D) Administrative feasibility

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(D) Test standardization

122. Match List I (Evaluation Type) with List II (Purpose):
P. Norm-Referenced,
Q. Criterion-Referenced,
R. Formative,
S. Summative
List II :
1. Skill mastery,
2. Peer ranking,
3. Final exam,
4. Practice feedback
(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-3, R-4, S-1
(C) P-2, Q-1, R-4, S-3
(D) P-3, Q-4, R-1, S-2

123. Innate physical traits related to performance are:
(A) Motor skill
(B) Motor fitness
(C) Motor learning
(D) Motor ability

124. The main shift of Physical Best (from AAHPERD Youth Fitness Test) was toward:
(A) Skill-related fitness
(B) Health-related fitness
(C) Motor educability
(D) Psychological fitness

125. Performance-related components:
1. Agility,
2. Balance,
3. Coordination,
4. Endurance,
5. Strength.
(A) 1, 2 and 3 only
(B) 1, 2 and 4 only
(C) 3, 4 and 5 only
(D) 1, 2, 3, 4 and 5

126. Which of the following correctly describes 'lordosis'?
(A) A hunchback or outward curve of the upper back.
(B) A side-to-side curvature of the spine.
(C) A flattening of the normal spinal curves.
(D) A swayback or excessive inward curve of the lower back.

127. Given below are two statements:
Assertion (A) : Evaluation is broader than measurement.
Reason (R) : Evaluation uses quantitative and qualitative data for value judgments.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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128. Difference between knowledge test and skill test?
(A) A knowledge test is subjective, while a skill test is objective.
(B) A knowledge test assesses cognitive understanding, while a skill test assesses psychomotor performance.
(C) A knowledge test is for beginners, while a skill test is for experts.
(D) There is no significant difference between the two.

129. Carotid pulse is located on the:
(A) Wrist
(B) Side of the neck
(C) Top of the foot
(D) Inside of the elbow

130. The Buss-Durkee Hostility Inventory assesses:
(A) Aggression
(B) Anxiety
(C) Self-efficacy
(D) Team Cohesion

131. Combination of strength and speed is:
(A) Endurance
(B) Agility
(C) Power
(D) Flexibility

132. Flexibility tests:
1. Sit-and-Reach,
2. Kraus-Weber Floor Touch,
3. Goniometer,
4. Harvard Step.
(A) 1 and 2 only
(B) 1, 2, and 3
(C) 3 and 4 only
(D) 1, 2, 3, and 4

2. Anxiety,
3. Striving for success,
4. Belief in capabilities

(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-1, R-4, S-3
(C) P-2, Q-4, R-1, S-3
(D) P-3, Q-1, R-4, S-2

183. Which test measures speed?
(A) Harvard Step Test
(B) Sit-and-Reach Test
(C) Pull-ups
(D) 50-yard Dash

184. Suprailiac skinfold is taken:
(A) Just above the hip bone.
(B) On the back of the arm.
(C) On the chest.
(D) On the calf muscle.

185. High 'concurrent validity' if scores:
(A) Accurately predict future performance.
(B) Remain stable over multiple administrations.
(C) Correlate highly with scores on another established, valid test measuring the same thing.
(D) Appear to be measuring what they are supposed to measure.

186. Harbans Singh Field Hockey test assesses:
(A) A player's dribbling and ball control skills.
(B) A player's shooting accuracy.
(C) A player's defensive tackling ability.
(D) A player's knowledge of field hockey rules.

187. Given below are two statements:
Assertion (A) : Specific skill tests for different sports are important.
Reason (R) : Motor skills for each sport are unique; general tests are not valid measures.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

188. What does "motor fitness" primarily consist of?
(A) Components like body composition and cardiovascular endurance.
(B) Components like speed, agility, power, and coordination.
(C) The ability to learn and acquire new motor skills.
(D) Knowledge about human movement and exercise.

189. Normal blood pressure for healthy young adult is:
(A) 160/100 mmHg
(B) 90/60 mmHg
(C) 120/80 mmHg
(D) 140/90 mmHg

190. Key principle in standard skill test construction?
(A) The test should be as easy as possible for all participants.
(B) The test should require no specialized equipment.
(C) The instructions can be varied by the tester.
(D) The test must accurately differentiate between different skill levels.

191. Making 8 out of 10 free throws is:
(A) Measurement
(B) A test
(C) Evaluation
(D) Assessment

192. Which are circumferences? 1. Waist, 2. Head, 3. Biacromial, 4. Calf.
(A) 1 and 4 only
(B) 2 and 3 only
(C) 1, 2, and 4
(D) 1, 2, 3, and 4

193. Purpose of diagnostic test?
(A) Determine a final grade.
(B) Identify specific areas of weakness or deficiency.
(C) Rank students against each other.
(D) Motivate students to perform better.

194. NOT a component of AAHPERD basketball test?
(A) Defensive Movement
(B) Control Dribble
(C) Passing
(D) Speed Spot Shooting

195. Advantage of objective tests over subjective tests?

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98. The 'Group Environment Questionnaire' (GEQ) measures:
(A) Team cohesion
(B) Individual motivation
(C) Anxiety levels
(D) Aggressive tendencies

99. When evaluating posture, 'kyphosis' refers to an exaggerated curvature of which part of the spine?
(A) Cervical (neck)
(B) Lumbar (lower back)
(C) Thoracic (upper back)
(D) Sacral (pelvic region)

100. A test that measures readiness to learn a physical skill is known as a:
(A) Skill Test
(B) Fitness Test
(C) Knowledge Test
(D) Motor Educability Test

101. The ability of the heart, lungs, and blood vessels to supply oxygenated blood to the working muscles for a prolonged period is called:
(A) Exerting maximum force against a heavy resistance one time.
(B) Performing high-intensity work without the presence of oxygen.
(C) Delivering oxygenated blood to muscles during prolonged activity.
(D) Moving a joint through its full and natural range of motion.

102. Match List I (Deviation) with List II (Description):
P. Kyphosis,
Q. Lordosis,
R. Scoliosis,
S. Genu Valgum
List II :
1. Knock-knees,
2. Lateral curve,
3. Inward curve lumbar,
4. Outward curve thoracic
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-4, Q-2, R-3, S-1
(D) P-3, Q-4, R-1, S-2

103. Which of the following is a test of 'static strength'?
(A) Vertical jump
(B) Isokinetic dynamometry
(C) Medicine ball throw
(D) Handgrip dynamometer test

104. In the context of evaluation, what does 'comprehensiveness' imply?
(A) The evaluation should cover all stated objectives and aspects of the program.
(B) The evaluation should be very difficult.
(C) The evaluation should be conducted very quickly.
(D) The evaluation should only use one type of test.

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105. Systolic blood pressure represents the pressure in the arteries when:
(A) The heart is at rest between beats.
(B) The body is in a state of sleep.
(C) The heart contracts to pump blood.
(D) The person is performing maximal exercise.

106. The AAHPERD Football Skill Test Battery includes all EXCEPT:
(A) Tackling a dummy
(B) Punting for distance
(C) Forward pass for accuracy
(D) Ball control or dribbling

107. Given below are two statements:
Assertion (A) : Harvard Step Test is a valid measure of cardiovascular fitness.
Reason (R) : It assesses heart recovery after exercise, indicating efficiency.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

108. The main purpose of constructing a 'knowledge test' in physical education is to:
(A) Assessing the specific physical skills and abilities of a student.
(B) Measuring understanding of rules, strategies, and health principles.
(C) Determining the innate motor educability and potential of students.

(D) Evaluating the technical precision of defensive tackling skills.

209. Function of evaluation in educational setting?
(A) To provide data for research purposes only.
(B) To determine the extent to which educational objectives are being achieved.
(C) To replace the need for teaching and instruction.
(D) To rank schools based on student performance.

210. Systolic blood pressure represents:
(A) The pressure exerted on the arterial walls when the heart contracts.
(B) The lowest pressure in the arteries during the cardiac cycle.
(C) The average pressure in the arteries over one cardiac cycle.
(D) The pressure within the ventricles of the heart.

211. Ability to perform movement in short period of time is:
(A) Endurance
(B) Agility
(C) Speed
(D) Strength

212. INCORRECT regarding test selection?
(A) A test should be valid for the purpose it is used.
(B) A test should provide reliable and consistent results.
(C) The test should be practical to administer in terms of time and resources.
(D) The most expensive and complex test is always the best choice.

213. "Ability of muscle to exert force against resistance" is:
(A) Flexibility
(B) Muscular Endurance
(C) Muscular Strength
(D) Power

214. Russell-Lange Test measures skill in:
(A) Tennis
(B) Volleyball
(C) Badminton
(D) Basketball

215. Goniometer measures:
(A) Body temperature
(B) Reaction time
(C) Blood pressure
(D) Joint range of motion (flexibility)

216. Given below are two statements:
Statement I : Ponderal Index measures body composition.
Statement II : BMI measures body build or stoutness.
(A) Both Statement I and Statement II are true.
(B) Both Statement I and Statement II are false.
(C) Statement I is true, but Statement II is false.
(D) Statement I is false, but Statement II is true.

217. Jumping as high as possible from standing start measures:
(A) Muscular endurance
(B) Agility
(C) Explosive power
(D) Flexibility

218. In knowledge test construction, what is 'item analysis'?
(A) Evaluating item difficulty and discriminatory power of questions.
(B) Determining the linguistic and reading level of the test content.
(C) Establishing broad performance norms for the representative sample.
(D) Checking the test for spelling, grammar, and punctuation errors.

219. Subscapular skinfold site:
(A) On the abdomen
(B) On the front of the thigh
(C) On the back of the upper arm
(D) Just below the inferior angle of the shoulder blade

220. Stick-to-it-iveness/persistence variable:
(A) Anxiety
(B) Mental Toughness
(C) Aggression
(D) Team Cohesion

221. NOT a test of coordinative ability:
(A) Burpee test (squat thrust)
(B) Plate tapping
(C) 1-RM bench press

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(D) Stick balance test

222. Dynamometer measures:
(A) Speed
(B) Flexibility
(C) Endurance
(D) Strength

223. Broer-Miller is a skill test for:
(A) Tennis
(B) Football
(C) Hockey
(D) Volleyball

224. Abnormal inward curvature of knees ("knock-knees"):
(A) Genu varum
(B) Genu valgum
(C) Pes planus
(D) Talipes equinus

225. Modifying teaching after poor mid-term results:
(A) Grading
(B) Program improvement
(C) Classification
(D) Research

226. Health-related fitness component:
(A) Body Composition
(B) Reaction Time
(C) Balance
(D) Agility

227. Schmithals-French Test evaluates skill in:
(A) Tennis
(B) Basketball
(C) Field Hockey
(D) Badminton

228. Which of the following is a process, not a tool?
(A) Test
(B) Questionnaire
(C) Stopwatch
(D) Evaluation

229. Resting HR of 50 bpm generally indicates:
(A) A poor level of cardiovascular fitness.
(B) An underlying heart condition.
(C) A high level of cardiovascular fitness.
(D) The athlete is currently under stress.

230. Deciding a time of 11.2s is "excellent" is:
(A) Test
(B) Evaluation
(C) Measurement
(D) Administration

231. Integrating senses with muscle movement:
(A) Speed
(B) Power
(C) Strength
(D) Coordination

232. Which of the following describes a characteristic of teacher-made tests compared to standardized tests?
(A) They often lack established reliability, validity, and norms.
(B) They are less relevant to the specific local curriculum.
(C) They are more expensive to develop for the school.
(D) They cannot be used for classroom grading purposes.

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233. 'Standing height' and 'sitting height' determine:
(A) Body fat percentage
(B) Somatotype
(C) Body proportions, such as the ratio of leg length to trunk length.
(D) Flexibility of the spine

234. Belief about performing a specific task:
(A) Task-specific self-efficacy
(B) General self-esteem
(C) Trait anxiety
(D) Achievement motivation

235. Cooper 12-minute run/walk estimates:
(A) Anaerobic power
(B) Muscular strength
(C) Agility
(D) VO_2 max (aerobic capacity)

236. Incorrect pairing:
(A) Sit-and-reach - Flexibility
(B) 50-yard dash - Cardiovascular Endurance
(C) Vertical Jump - Power
(D) Handgrip Dynamometer - Static Strength

237. Borg Scale measures:
(A) Blood pressure
(B) Heart rate

(C) Perceived exertion
(D) Anxiety

238. Context of skill tests, French-Stalter Badminton test purpose?
(A) To measure the velocity of a smash.
(B) To measure the ability to rally continuously.
(C) To measure the agility of the player on court.
(D) To measure the accuracy of the short serve.

239. 'Objectivity' in testing means:
(A) The scoring of the test is free from bias or subjective judgment.
(B) The test measures what it claims to measure.
(C) The test yields consistent scores.
(D) The test is easy to administer.

240. Measure of body volume used for composition?
(A) BMI calculation
(B) Hydrostatic (underwater) weighing
(C) Skinfold measurement
(D) Waist-to-hip ratio

241. Score compared against pre-determined standard:
(A) Norm-referenced
(B) Criterion-referenced
(C) Subjective
(D) Standardized

242. 'Pulse rate' is pressure wave measurement in:
(A) Arteries
(B) Veins
(C) Capillaries
(D) Lungs

243. Iowa-Brace test measures:
(A) Physical fitness
(B) Muscular strength
(C) Motor educability
(D) Specific sports skill

244. Mesomorphic somatotype (1-7-1) characteristics:
(A) A predominance of linearity and fragility.
(B) A predominance of roundness and soft tissue.
(C) An equal balance of fat, muscle, and linearity.
(D) A predominance of muscularity and bone development.

245. Key step in large-scale testing administration?
(A) Keeping the purpose of the test a secret from participants.
(B) Using different equipment for different participants.
(C) Training the testers to ensure consistency.
(D) Changing the rules for individuals who are struggling.

246. Test for anaerobic power?
(A) 1-mile run
(B) Wingate test
(C) Harvard Step Test
(D) 6-minute walk test

247. Difference between motor ability and motor skill:
(A) A specific, learned action, while motor skill is an innate trait.
(B) Synonymous with motor skill.
(C) Only relevant for children, while motor skill is for adults.
(D) A general, enduring trait, while motor skill is a specific, learned action.

248. Significant value of testing/measurement:
(A) Provide objective data for evaluation and program improvement.
(B) Eliminate the need for subjective observation by the teacher.
(C) Rank students for competitive purposes.
(D) Generate complex statistical reports.

249. NOT typically measured in basic assessment?
(A) Heart rate
(B) Blood pressure
(C) Aggression level
(D) Breathing frequency

250. Ultimate goal of evaluation?
(A) Facilitate the optimal development of each individual.
(B) Identify the single best athlete in a group.
(C) Fulfill an administrative requirement.
(D) Compare local students to national averages.

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Direction : Please read the following source carefully.

In the domain of physical education and sports, the terms test, measurement, and evaluation represent a hierarchical and interconnected process fundamental to scientific practice

(B) Performance test
(C) Psychomotor test
(D) Knowledge test

262. What is the purpose of performing 'item analysis' during the construction of a standard knowledge test?
(A) To ensure the test items cover the entire syllabus.
(B) To evaluate the effectiveness of individual test questions.
(C) To establish the overall validity of the test.
(D) To develop the scoring procedures for the test.

263. Which of the following best distinguishes a skill test from a knowledge test as described in the source?
(A) Skill tests are objective, while knowledge tests are subjective.
(B) Skill tests are easier to construct than knowledge tests.
(C) Skill tests measure the psychomotor domain, while knowledge tests measure the cognitive domain.
(D) Skill tests do not require a process of validation, unlike knowledge tests.

264. The initial stage in constructing a standard knowledge test, as mentioned in the text, is:
(A) Writing the test items.
(B) Performing item analysis.
(C) Conducting a preliminary administration.
(D) Planning the test with a table of specifications.

265. An educator designs a test where students must accurately serve a volleyball into designated court zones. This is a clear example of:
(A) A skill test measuring proficiency.
(B) A standard knowledge test construction.
(C) An item analysis procedure.
(D) The cognitive domain assessment.

Direction : Please read the following source carefully.

Within the broader concept of fitness, physical education makes important distinctions between physical fitness, motor fitness, motor ability, and motor educability. 'Physical fitness' is often defined as a state of well-being that allows an individual to perform daily activities with vigor, reduce the risk of health problems, and have sufficient energy for leisure pursuits. It is typically broken down into health-related and skill-related components. 'Motor fitness', on the other hand, is more specific to performance, encompassing components like speed, agility, power, and coordination, which are essential for success in sports and athletic activities. It is fundamentally concerned with the quality of movement. 'Motor ability' refers to an individual's innate or acquired potential to perform a motor skill. It is a more general and enduring trait that underlies the performance of a variety of skills. For example, an individual with high motor ability might find it easier to learn sports like tennis and badminton. Finally, 'motor educability' is the capacity to learn new and complex motor skills. It is not about the skills one already possesses, but rather the ease and speed with which an individual can acquire new ones. A person with high motor educability can quickly grasp the mechanics of a novel movement pattern and refine it with practice, making them highly coachable.

Based on the above source, attempt the following five questions.

266. Which concept is described as the capacity to learn new and complex motor skills with ease?
(A) Physical fitness
(B) Motor educability
(C) Motor fitness
(D) Motor ability

267. According to the passage, how does 'motor fitness' differ from 'physical fitness'?
(A) Motor fitness is innate, while physical fitness is acquired.
(B) Motor fitness is specific to athletic performance, while physical fitness relates to general well-being.
(C) Motor fitness includes health-related components, while physical fitness is skill-related.
(D) Motor fitness is about learning skills, while physical fitness is about performing them.

268. An individual's underlying, general potential to perform a variety of motor skills is referred to as:
(A) Motor ability
(B) Motor educability

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scores, minimizing subjective bias. Finally, norms provide a standardized framework for interpreting scores by comparing them to the performance of a large, representative sample group. The process of evaluation itself is a multi-step procedure that begins with setting clear objectives, followed by selecting and administering appropriate tests. The subsequent steps involve collecting and scoring the data, analyzing and interpreting these scores against the established norms or criteria, and finally, using these judgments to make informed decisions, provide feedback, and refine instructional or training programs.

Based on the above source, attempt the following five questions.

256. Which principle of test selection is concerned with whether a test measures what it is intended to measure?
(A) Reliability
(B) Validity
(C) Objectivity
(D) Normativity

257. If two different physical education teachers administer the same shuttle run test to a student and get almost identical time scores, the test is said to have high:
(A) Validity
(B) Subjectivity
(C) Norms
(D) Objectivity

258. According to the passage, what is the primary purpose of establishing 'norms' for a test?
(A) To provide a standardized basis for interpreting an individual's score.
(B) To ensure the test is easy to administer for all testers.
(C) To guarantee the consistency of test results over multiple trials.
(D) To confirm that the test is measuring the correct attribute.

259. Based on the process of evaluation described, what is the immediate step that follows the selection and administration of tests?
(A) Setting the objectives of the evaluation.
(B) Analyzing and interpreting the scores.
(C) Collecting and scoring the data.
(D) Making informed decisions and providing feedback.

260. A coach finds that her new agility test gives widely different results for the same athlete on consecutive days, despite no change in the athlete's condition. The test primarily lacks:
(A) Reliability
(B) Validity
(C) Objectivity
(D) Administrative feasibility

Direction : Please read the following source carefully.

The development of effective assessment tools in physical education requires a clear understanding of the different types of tests and the systematic process of their construction. Tests can be broadly categorized into knowledge tests and skill tests. Standard knowledge tests are designed to measure the cognitive domain, assessing an individual's understanding of rules, strategies, historical context, and scientific principles related to physical activity and sports. The construction of a standard knowledge test is a rigorous process involving several stages: planning the test by creating a table of specifications, writing the test items (e.g., multiple-choice, true/false), conducting a preliminary administration, performing item analysis to evaluate the difficulty and discrimination index of each question, and finally, revising and assembling the final test form. In contrast, skill tests are designed to measure the psychomotor domain, evaluating an individual's proficiency in performing a specific physical skill. The construction of a skill test requires identifying the key components of the skill, selecting a test item that accurately reflects the performance of that skill in a game-like situation, developing clear instructions and scoring procedures, and establishing the test's validity and reliability. For example, a basketball dribbling test would be a skill test, while a written exam on basketball court dimensions would be a knowledge test.

Based on the above source, attempt the following five questions.

261. According to the passage, a test designed to measure a student's understanding of biomechanical principles would be classified as a:
(A) Skill test

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and pedagogical improvement. A 'test' is an instrument, tool, or a specific procedure used to obtain information or data. This could range from a written examination on the rules of a game to a physical performance task like the 50-meter dash. 'Measurement' is the subsequent act of administering the test to collect quantitative data. It involves assigning a numerical score or value to a specific attribute, trait, or performance, such as recording the time taken to run the 50-meter dash as 6.2 seconds. 'Evaluation', the highest level of this process, is the qualitative judgment and interpretation of the data obtained through measurement. It involves comparing an individual's score against a standard, a norm, or their own previous performance to determine its worth, value, or meaning. The importance of this entire sequence lies in its ability to facilitate player selection, classify students based on ability, diagnose weaknesses, predict future performance, and assess the effectiveness of a training program or teaching methodology, thereby providing a robust framework for evidence-based decision-making.

Based on the above source, attempt the following five questions.

251. Which of the following statements best describes the relationship between test, measurement, and evaluation?
(A) They are independent processes that can be used interchangeably.
(B) A test is a tool for measurement, and evaluation is the interpretation of that measurement.
(C) Evaluation is the process of collecting data, which is then measured by a test.
(D) Measurement is the final judgment, based on the results of a test and evaluation.

252. According to the passage, what is the primary function of 'measurement' in physical education?
(A) To assign a numerical value to an observed performance or attribute.
(B) To make a qualitative judgment about a student's performance.
(C) To design the instrument or tool for data collection.
(D) To classify students into different groups based on their abilities.

253. Based on the source, an educator determining that a student's sit-up score is 'excellent' by comparing it to national norms is an example of:
(A) Testing
(B) Measurement
(C) Evaluation
(D) Administration

254. The passage suggests that the overarching importance of the test-measurement-evaluation process is to:
(A) ensure all students achieve a minimum level of physical fitness.
(B) focus solely on the selection of elite athletes for competition.
(C) replace subjective coaching observations with quantitative data.
(D) provide a basis for objective and evidence-based decision-making.

255. What distinguishes a 'test' from 'measurement' as per the provided text?
(A) A test is quantitative, while measurement is qualitative.
(B) A test provides a final judgment, while measurement is a preliminary step.
(C) A test is a tool or procedure, while measurement is the act of using that tool to gather data.
(D) A test is used for program assessment, while measurement is used for player selection.

Direction : Please read the following source carefully.

The efficacy and credibility of any evaluation in physical education hinge upon the adherence to established principles and a systematic process. Key among these principles are the criteria for selecting an appropriate test, which include validity, reliability, objectivity, and the availability of norms. Validity is the most crucial principle, ensuring that a test measures what it claims to measure; for instance, a vertical jump test is a valid measure of explosive leg power, but not of cardiovascular endurance. Reliability refers to the consistency or repeatability of a test; a reliable test will yield similar results when administered to the same individuals under similar conditions on different occasions. Objectivity, a subset of reliability, is the degree to which different testers can administer a test and obtain comparable

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(C) Motor fitness
(D) Physical fitness

269. A coach observes that a new athlete learns the complex technique of a pole vault much faster than her peers. The passage suggests this athlete likely has high:
(A) Pre-existing motor fitness.
(B) General physical fitness.
(C) Motor educability.
(D) Innate motor ability.

270. The ability to perform daily activities with vigor and have energy for leisure pursuits is a key characteristic of:
(A) Motor fitness
(B) Motor ability
(C) Motor educability
(D) Physical fitness

Direction : Please read the following source carefully.

A significant focus of modern physical education programs is the assessment of health-related fitness, which comprises components critical for overall well-being and the prevention of hypokinetic diseases. These components are distinct from skill-related fitness and include cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Cardiorespiratory endurance is the ability of the circulatory and respiratory systems to supply oxygen during sustained physical activity, often measured through tests like the step test or distance runs. Muscular strength is the ability of a muscle to exert maximum force against a resistance, typically assessed with one-repetition maximum (1-RM) tests. Muscular endurance is the ability of a muscle or muscle group to perform repeated contractions or sustain a contraction over time, measured by tests like push-ups or sit-ups to exhaustion. Flexibility refers to the range of motion available at a joint, commonly evaluated using tests such as the sit-and-reach test for lower back and hamstring flexibility. Lastly, body composition is the relative proportion of fat mass and fat-free mass in the body, which can be estimated through various methods. Health-related fitness tests provide valuable data for designing personalized exercise prescriptions and educating individuals about their health status, thereby promoting lifelong physical activity.

Based on the above source, attempt the following five questions.

271. Which of the following is NOT listed in the passage as a component of health-related fitness?
(A) Muscular strength
(B) Body composition
(C) Agility
(D) Flexibility

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272. A test that requires a participant to perform as many sit-ups as possible in one minute is primarily designed to measure:
(A) Muscular strength
(B) Muscular endurance
(C) Cardiorespiratory endurance
(D) Flexibility

273. According to the source, the sit-and-reach test is a common method for evaluating:
(A) The ability to exert maximum force.
(B) The proportion of fat mass to fat-free mass.
(C) The efficiency of the circulatory system.
(D) The range of motion at a joint.

274. The passage defines 'cardiorespiratory endurance' as the ability of the circulatory and respiratory systems to:
(A) supply oxygen during sustained physical activity.
(B) exert a single maximal force against resistance.
(C) move a joint through its full range of motion.
(D) perform repeated muscular contractions over time.

275. The primary purpose of conducting health-related fitness tests, as inferred from the passage, is to:
(A) select athletes for competitive sports teams.
(B) compare the performance of students across different schools.
(C) provide data for personalized exercise design and health education.
(D) measure an individual's innate motor ability.

Direction : Please read the following source carefully.

The specific components of fitness—strength,

(B) To calculate the Ponderal Index.
(C) To estimate body fat percentage.
(D) To measure the circumference of body segments.

288. 'Biacromial' and 'bi-iliac' are examples of which type of anthropometric measurement?
(A) Circumferences
(B) Diameters
(C) Skinfolds
(D) Heights

289. The passage states that identifying specific anatomical 'land marks' is essential for:
(A) Calculating the Body Mass Index directly.
(B) Assessing psychological variables in athletes.
(C) Evaluating the posture of an individual.
(D) Ensuring the accuracy and consistency of measurements.

290. The Ponderal Index is described as an assessment of body build or leanness that relates:
(A) weight to the cube of height.
(B) weight to the square of height.
(C) height to the cube of weight.
(D) skinfold thickness to total body weight.

Direction : Please read the following source carefully.

Beyond basic anthropometry, the evaluation of human physique extends to somatotyping and postural analysis, both of which have significant implications in physical education and sports. Somatotyping is a method used to classify the human body into three primary components: endomorphy (relative fatness), mesomorphy (relative musculoskeletal development), and ectomorphy (relative linearity or slenderness). An individual's physique is rated on a scale for each component, resulting in a three-number somatotype that provides a holistic description of their body build. This classification can be useful in talent identification and for understanding an individual's predisposition towards certain types of physical activities. Postural evaluation, on the other hand, is the systematic assessment of body alignment and symmetry. Various techniques are employed, ranging from simple visual observation using plumb lines and posture charts to more sophisticated photographic and videographic analyses. The goal is to identify postural deviations such as kyphosis (exaggerated thoracic curvature), lordosis (excessive inward lumbar curve), or scoliosis (lateral spinal curvature). Correcting these deviations is crucial not just for aesthetic reasons, but for preventing musculoskeletal injuries, improving biomechanical efficiency, and enhancing overall functional movement, making postural screening a vital component of a comprehensive physical education program.

Based on the above source, attempt the following five questions.

291. In the context of somatotyping, the component that refers to relative musculoskeletal development is known as:
(A) Endomorphy
(B) Ectomorphy
(C) Mesomorphy
(D) Kyphosis

292. An individual with a high degree of relative linearity or slenderness would be classified as having a high rating in:
(A) Ectomorphy
(B) Endomorphy
(C) Mesomorphy
(D) Lordosis

293. According to the passage, what is the primary purpose of postural evaluation?
(A) To classify an individual's body build into three components.
(B) To determine an individual's relative fatness.
(C) To predict success in specific sporting activities.
(D) To identify deviations in body alignment and symmetry.

294. The passage identifies scoliosis as which type of postural deviation?
(A) An exaggerated thoracic curvature.
(B) A lateral spinal curvature.
(C) An excessive inward lumbar curve.
(D) A forward head posture.

295. The source suggests that both somatotyping and postural evaluation are useful in physical education for purposes such as:
(A) measuring cognitive understanding and

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Schmithals-French Field Hockey Test. In Tennis, the Dyer Tennis Test is a classic example that involves rallying a ball against a backboard to measure control and consistency. For Volleyball, the Russell-Lange Volleying Test evaluates the accuracy of setting, while other tests may assess the power and accuracy of the service or spike. The primary purpose of these tests is to provide objective data for player assessment, positional assignments, and feedback for skill improvement. Based on the above source, attempt the following five questions.

281. The Russell-Lange Test is specifically designed to assess a skill in which sport?
(A) Volleyball
(B) Badminton
(C) Tennis
(D) Basketball

282. What is the primary characteristic that distinguishes a sports skill test from a general motor fitness test?
(A) Sports skill tests are easier to administer.
(B) Sports skill tests are highly specific to the demands of a single sport.
(C) Sports skill tests measure innate ability rather than learned proficiency.
(D) Sports skill tests are subjective in their scoring method.

283. A test that involves an athlete dribbling a basketball around a series of cones for time would be an example of a:
(A) General coordinative ability test.
(B) Specific sports skill test for basketball.
(C) Health-related fitness test.
(D) Motor educability assessment.

284. The French-Stalter short service test and the Dyer Tennis Test are mentioned as examples of tests that primarily measure:
(A) Skill proficiency and control in a specific sport.
(B) General athletic power and speed.
(C) Cardiovascular endurance during a game.
(D) Understanding of the cognitive rules of the game.

285. According to the passage, the McDonald Soccer Test primarily involves which action?
(A) Dribbling around cones.
(B) Shooting for goal accuracy.
(C) Kicking a ball against a wall.
(D) Heading the ball for distance.

Direction : Please read the following source carefully.

Anthropometric measurements provide quantitative data on the size, shape, and composition of the human body, which are critical in physical education for monitoring growth, determining body type, and assessing health status. The process requires identifying specific anatomical 'land marks' to ensure accuracy and consistency. Key measurements include standing height and sitting-height, which can be used to analyze body proportions. Weight provides a measure of total body mass. Diameters, such as the biacromial (shoulder) and bi-iliac (hip) widths, help describe the skeletal frame. Circumferences of various body segments like the arm, waist, hip, and calf provide information about muscularity and fat distribution. A crucial and widely used measurement is the skinfold thickness, taken at sites such as the triceps, subscapular, and suprailiac, which allows for the estimation of body fat percentage. From these basic measurements, several indices can be derived. The Body Mass Index (BMI), calculated as weight in kilograms divided by the square of height in meters (kg/m^2), is a common screening tool for weight categories. Another, the Ponderal Index, which relates weight to the cube of height, is also used to assess body build or leanness. These measurements, when taken systematically, form the basis for somatotyping and postural analysis. Based on the above source, attempt the following five questions.

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286. The Body Mass Index (BMI) is derived from which two fundamental anthropometric measurements?
(A) Sitting-height and waist circumference.
(B) Skinfold thickness and arm circumference.
(C) Biacromial and bi-iliac diameters.
(D) Weight and height.

287. According to the passage, what is the primary purpose of taking skinfold measurements?
(A) To determine an individual's skeletal frame width.

endurance, speed, flexibility, and coordinative abilities—require distinct testing protocols to isolate and quantify them accurately. Strength testing, beyond general health-related measures, can be specific to different types of muscle contractions, such as isometric (static), isotonic (dynamic), or isokinetic strength, often measured with dynamometers or specialized machines. Endurance testing can be bifurcated into muscular endurance, assessed by repetition-to-fatigue tests, and cardiovascular endurance, evaluated through maximal or sub-maximal tests like treadmill protocols that measure oxygen uptake (VO_2 max). Speed is typically measured through short-distance sprints (e.g., 30m or 50m dash), where reaction time and acceleration are key factors. Flexibility assessment involves measuring the range of motion at specific joints, using tools like goniometers for precision or field tests like the sit-and-reach for practicality. Coordinative abilities, a complex component involving the interplay of the central nervous system and the musculoskeletal system, include balance, rhythm, spatial orientation, and differentiation of movement. Tests for these abilities, such as the stork stand for balance or various agility runs (e.g., shuttle run) that require rapid changes in direction, are crucial for sports that demand intricate movement patterns and quick adaptation.

Based on the above source, attempt the following five questions.

276. A test that uses a goniometer to precisely measure the angle of flexion at the knee joint is assessing which fitness component?
(A) Flexibility
(B) Strength
(C) Speed
(D) Coordinative ability

277. According to the passage, the stork stand test is used to evaluate which specific coordinative ability?
(A) Rhythm
(B) Spatial orientation
(C) Differentiation of movement
(D) Balance

278. Which of the following best describes the method for testing 'speed' as mentioned in the source?
(A) Measuring maximal oxygen uptake on a treadmill.
(B) Timing performance over a short-distance sprint.
(C) Performing repetitions of an exercise to fatigue.
(D) Using a dynamometer to measure force output.

279. The passage distinguishes between two types of endurance for testing purposes. What are they?
(A) Static endurance and dynamic endurance.
(B) Aerobic endurance and anaerobic endurance.
(C) Muscular endurance and cardiovascular endurance.
(D) Short-term endurance and long-term endurance.

280. An agility run that involves rapid changes in direction would primarily be a test for which fitness component?
(A) Static strength
(B) Cardiovascular endurance
(C) Isometric flexibility
(D) Coordinative abilities

Direction : Please read the following source carefully.

The evaluation of performance in specific sports necessitates the use of standardized sports skill tests. These tests are designed to objectively measure an individual's proficiency in executing the fundamental skills required for a particular sport. Unlike general motor fitness tests, sports skill tests are highly specific and often simulate game-like situations. For Badminton, tests might include the French-Stalter short service test to measure accuracy in serving or a wall volley test to assess wrist action and control. In Basketball, the Johnson Basketball Test battery could be used, which includes tests for speed dribbling, field-goal shooting accuracy, and passing. For Football, tests like the McDonald Soccer Test (wall-kicking) or specific tests for dribbling speed around cones and shooting accuracy are common. Hockey skill tests often focus on dribbling, shooting for accuracy, and controlling the ball, such as the

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psychological toughness.
(B) assessing cardiovascular fitness and vital capacity.
(C) talent identification and injury prevention.
(D) testing specific sports skills and team cohesion.

Direction : Please read the following source carefully.

The comprehensive assessment of an individual in physical education and sports science involves not only physical attributes but also key physiological and psychological phenomena. Testing of physiological indicators provides insight into the body's functional status. Common measurements include blood pressure, which reflects the force of blood against artery walls; breathing frequency, or the number of breaths per minute; and vital capacity, the maximum amount of air a person can exhale after a full inhalation, often measured with a spirometer. Heart rate and pulse rate are used to monitor cardiovascular stress and recovery. Body temperature indicates the metabolic state. Body composition, which quantifies the relative amounts of fat and lean tissue, is another crucial physiological parameter. In parallel, the evaluation of psychological variables is essential for understanding performance, motivation, and well-being. Standardized questionnaires and inventories are used to test for traits like anxiety, which can be state (situational) or trait (dispositional). Aggression levels, team cohesion, achievement motivation, mental-toughness, and self-efficacy are other critical psychological constructs. Measuring these variables helps coaches and educators to develop mental skills training programs, foster positive team dynamics, and support athletes in reaching their full potential both on and off the field.

Based on the above source, attempt the following five questions.

296. Which physiological phenomenon is defined as the maximum amount of air a person can exhale after a full inhalation?
(A) Breathing frequency
(B) Pulse rate
(C) Blood pressure
(D) Vital capacity

297. According to the passage, what is a primary tool used for testing psychological variables like anxiety and team cohesion?
(A) Standardized questionnaires and inventories.
(B) Spirometers and dynamometers.
(C) Direct physiological measurement.
(D) Postural analysis charts.

298. The text implies that measuring psychological variables such as achievement motivation and mental-toughness is important because it:
(A) allows for the direct measurement of body composition.
(B) helps in developing mental skills training programs for athletes.
(C) is the most accurate way to assess vital capacity and heart rate.
(D) provides a clear indicator of an individual's somatotype.

299. 'Body composition' is described in the source as a measure of:
(A) the force of blood against the artery walls.
(B) the relative amounts of fat and lean tissue.
(C) the maximum amount of air that can be exhaled.
(D) the number of breaths taken per minute.

300. Which of the following pairs correctly matches a physiological phenomenon with a psychological variable as discussed in the text?
(A) Blood pressure and anxiety.
(B) Team cohesion and vital capacity.
(C) Breathing frequency and somatotyping.
(D) Self-efficacy and body temperature.

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like speed, agility, power, and coordination. While there is overlap, the fundamental difference lies in their goals: physical fitness promotes long-term health, whereas motor fitness enhances skilled athletic performance and overall technical proficiency.

47. (A) Both A and R are true and R is the correct explanation of A.
Skinfold measurements are a common and effective way to estimate body composition in field settings. This method is based on the principle that the thickness of subcutaneous fat is proportional to the total amount of body fat. By measuring specific sites with calipers, researchers can use mathematical formulas to calculate an individual's overall fat percentage. This provides a practical alternative to more complex laboratory methods for assessing health and fitness levels in various athletic and educational populations.

48. (B) A driving test where a person must demonstrate specific maneuvers to pass.
A criterion-referenced test evaluates an individual's performance against a pre-determined standard or set of criteria rather than comparing them to others. The focus is on determining whether the person has mastered a specific skill or reached a minimum level of proficiency. A driving test is a classic example, as the candidate must successfully perform certain maneuvers to pass. This approach ensures that all individuals meet the required standards for safety, competence, or technical mastery of a task.

49. (B) Iowa-Brace Test - Volleyball
Various standardized tests are designed for specific sports or physical attributes. The McDonald Soccer Test is used for football, and the Dyer Backboard Test is a staple for tennis evaluation. Similarly, the AAHPERD battery is well-known for basketball skill assessment. However, pairing the Iowa-Brace Test with volleyball is incorrect, as this test is actually designed to measure motor educability through a series of general physical stunts rather than specific sport skills or technical proficiency in volleyball.

50. (A) Administering the test to a large, representative sample population.
Developing norms for a standardized test involves administering the instrument to a large and representative sample of the target population. The resulting data provides a distribution of scores that serves as a frame of reference for interpreting future results. Norms allow educators to determine how an individual's performance compares to their peers based on age, gender, or other characteristics. This process is essential for providing context and meaning to raw test scores in physical education and research.

51. (C) Motor ability
Motor ability refers to the general, enduring, and largely innate capacity of an individual to perform a wide variety of motor skills. It serves as the foundation upon which specific sports skills are built and refined through practice. Factors such as reaction time, balance, and coordination are key components of motor ability. Understanding an individual's motor ability helps coaches predict their potential for success in different physical activities and tailor training programs to their inherent capabilities.

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52. (B) 1, 3, and 4
Constructing effective knowledge tests in physical education requires a balanced approach. These tests typically include objective items such as multiple-choice, true-false, and matching questions to ensure reliable scoring. A key requirement is content validity, which depends on how well the test items cover the intended material. While essay questions can measure deeper understanding, they are more difficult to score objectively. A well-designed test provides a fair and comprehensive assessment of cognitive learning in any program.

53. (C) Facilitating program improvement, motivation, and goal assessment.
Evaluation is a vital process in physical education that extends beyond simple grading or ranking. Its primary importance lies in facilitating program improvement by identifying areas where instruction can be enhanced. It also serves as a powerful motivator for students by providing feedback on their progress toward specific goals. By assessing the achievement of objectives, evaluation ensures that the physical education

8. (A) Norm-referenced evaluation
Norm-referenced evaluation involves comparing an individual's performance against the scores of a specific peer group or population. This approach identifies where a student stands relative to others, often expressed through rankings or percentiles. It is particularly useful for classification purposes and identifying competitive standing within a team or class. This method focuses on relative performance levels rather than the absolute mastery of a specific skill or a set of pre-determined criteria.

9. (C) Explaining test purposes and procedures clearly to all participants.
The successful administration of a testing program begins with clear communication between the tester and the participants. Explaining the specific purposes and procedures of the test ensures that individuals understand what is required and how they will be evaluated. This transparency reduces anxiety and promotes optimal performance by clarifying expectations. Proper orientation is essential before moving on to logistical preparations like equipment setup or physical warm-up sessions for the testing site.

10. (A) Both A and R are true and R is the correct explanation of A.
Validity is the most critical criterion when selecting a test for physical education. A test is considered valid only if it accurately measures the specific attribute or skill it was designed to assess. Without high validity, the results obtained do not reflect the actual ability of the participant, rendering the evaluation process meaningless. Therefore, ensuring validity is the primary step in selecting appropriate assessment tools for any physical education or athletic program.

11. (D) Objectivity
Objectivity refers to the degree of agreement between different competent judges regarding the score or value of a measurement. A highly objective test yields the same results regardless of who is administering or scoring it. This quality is essential for ensuring fairness and reducing personal bias in assessment. Standardized scoring keys and clear criteria are often used to enhance the objectivity of performance-based evaluations in various sports and physical education settings.

12. (B) Validity
Validity ensures that a testing instrument specifically measures the intended fitness component without significant interference from unrelated factors. For example, a test designed for cardiovascular endurance should accurately reflect aerobic capacity rather than being limited by muscular strength. If a test is heavily influenced by secondary attributes, its results are no longer a true representation of the target variable, thereby reducing its overall scientific validity for use in assessing specific physical qualities.

13. (C) It has fixed procedures for administration and scoring, and established norms.
A standardized test is characterized by established, fixed procedures for both administration and scoring, ensuring consistency across different environments. These tests also provide established norms, allowing for the comparison of scores against a representative population. By following specific protocols, administrators minimize external variables that could affect results. This standardization makes the test a reliable and objective tool for assessing performance and tracking progress over time in physical education and research.

14. (D) Iowa-Brace Test
Motor educability represents an individual's innate capacity to learn and acquire new and complex physical skills with relative ease. The Iowa-Brace Test is specifically designed to assess this ability through a series of varied stunts and movements. Unlike tests of cardiovascular endurance or muscular strength, it focuses on the potential for skill acquisition. This measurement helps instructors identify individuals who may excel in new activities and adapt quickly to unfamiliar movement patterns.

15. (A) 1 and 4 only
The evaluation process is a comprehensive approach that must begin with clearly defined objectives to determine what is being measured. It is not merely a terminal activity; it can also be formative and ongoing throughout a program. Evaluation relies on both objective data and subjective observations to form a final value judgment. This judgment helps in understanding the overall effectiveness of instruction and

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61. (C) Scoliosis
Scoliosis is a postural deviation characterized by an abnormal lateral or sideways curvature of the spine. This condition can result in an asymmetrical appearance, such as uneven shoulders or hips. While some minor curvatures are common, significant scoliosis may require corrective exercises or medical intervention. Early detection through regular postural screenings in physical education is important for preventing long-term skeletal issues and maintaining overall musculoskeletal health and proper functional alignment of the body segments for athletes and students.

62. (A) P-4, Q-3, R-2, S-1
Accurate anthropometric measurement requires the use of specific instruments designed for different types of data collection. A weighing scale is used for body mass, while Harpenden calipers are essential for measuring skinfold thickness. For circumference measurements, a Gulick tape provides consistent tension to ensure reliability. Diameters across skeletal landmarks are typically measured using an anthropometer or large sliding calipers. Using the correct tools is fundamental for obtaining scientifically valid and reliable measurements of the human body for research.

63. (A) Principle of Specificity
The principle of specificity states that a test must be directly relevant and specific to the sport or fitness component being assessed. For a test to be effective, it should simulate the movement patterns and physiological demands of the actual activity. For instance, a test of leg power for a volleyball player should ideally involve jumping. Adhering to this principle ensures that the assessment provides meaningful information that can be applied to improve performance and technical skills in athletes.

64. (B) The number of breaths taken per minute.
Breathing frequency, also known as respiratory rate, is a physiological measure typically recorded as the number of breaths an individual takes per minute. It is an indicator of respiratory efficiency and can vary significantly based on activity levels and fitness. During rest, the rate is lower, but it increases dramatically during exercise to meet the body's higher oxygen demands. Monitoring this frequency helps in assessing an individual's physiological response to physical stress and their overall cardiorespiratory health and efficiency.

65. (B) Skill test with specific targets.
To accurately assess a specific skill like serving accuracy, the most effective method is a skill test using specific targets. This type of assessment provides a quantitative measure of performance by recording how many times a participant hits a designated area. Unlike written knowledge tests or general fitness tests, a targeted skill test directly evaluates the psychomotor proficiency required for the task. This objective data allows for precise feedback and the identification of specific technical improvements for the athlete.

66. (A) Tendency to strive for success and persist in the face of failure.
In the context of sports psychology, achievement motivation refers to an individual's internal drive to strive for success and persist when facing challenges or failure. It involves a strong desire to excel and meet high standards of performance during competition. Athletes with high achievement motivation are typically more goal-oriented and willing to invest the effort necessary to improve their skills. This psychological trait is a key determinant of long-term success and resilience in competitive physical activities and programs.

67. (A) Both A and R are true and R is the correct explanation of A.
Standardized procedures must be strictly followed during the administration of any test to ensure the results are reliable and valid. Any deviation from the established protocols can introduce external variables that skew the data, making comparisons between individuals or groups meaningless. Maintaining consistency in environment, instructions, and scoring is essential for scientific accuracy. When protocols are upheld, the resulting data provides a true reflection of the attribute being measured, allowing for fair and accurate evaluation and monitoring.

68. (D) 60-100 beats per minute
The normal range for a resting heart rate in a healthy adult is typically between 60 and 100 beats per minute. Factors such as age, fitness

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24. (A) Serving ability
The Russell-Lange Volleyball Skill Test is a standardized instrument specifically designed to assess a player's serving ability. Serving is a critical skill in volleyball that requires both accuracy and power to effectively start a rally. This test uses specific target areas on the court to quantify a player's proficiency in placing the ball. By measuring performance under controlled conditions, coaches can identify strengths and areas needing improvement for individual players and team strategies.

25. (D) 1, 2, 3 and 4 only
Assessing badminton proficiency involves various specialized tests that measure different aspects of the game. The French-Stalter test focuses on the accuracy of the short serve, while the Miller Wall Volley measures overall rally ability and coordination. Standardized tests like the Scott-Fox are used to evaluate long serve accuracy. These tests require specific equipment such as rackets and shuttlecocks. Most major physical education organizations recognize these validated skill assessments for tracking progress and evaluating players' performance levels.

26. (A) Defensive movement
The Johnson Basketball Test is a well-known battery used to evaluate fundamental skills in the sport. It includes specific items designed to measure dribbling speed, passing accuracy, and field-goal shooting proficiency. These components provide a quantitative assessment of an individual's offensive capabilities. However, the battery does not include a specific measure for defensive movement. Coaches often use this data to determine a player's overall technical skill level and identify specific areas where technical training is required.

27. (A) Both A and R are true and R is the correct explanation of A.
Anthropometric measurements play a vital role in identifying athletic talent because physical characteristics often dictate suitability for specific sports. Body size, limb length, and overall composition can provide a mechanical advantage in certain activities. For example, height is often a prerequisite for success in basketball or volleyball. By analyzing these physical traits, coaches can guide individuals toward sports where their natural body build provides the greatest potential for high-level competitive performance and specialized roles.

28. (B) Evaluating general soccer playing ability
The McDonald Soccer Test is designed to evaluate general soccer playing ability through a series of kicking tasks against a wall. It measures an individual's capacity to control the ball and maintain accuracy under time pressure. Unlike tests that focus on a single skill, this assessment provides a broader indication of a player's technical proficiency and coordination. It is a widely used and practical tool for assessing soccer skill levels in physical education and training programs.

29. (C) Schmithals-French Field Hockey Test
The Schmithals-French Field Hockey Test is a recognized instrument used to assess technical proficiency in the sport. It consists of several items that measure fundamental skills such as dribbling, fielding, and hitting. These tasks are performed under controlled conditions to provide an objective score of a player's ability. This test is essential for coaches and teachers to monitor progress and identify specific technical deficiencies in field hockey players at various levels of proficiency and experience.

30. (D) Tennis
The Dyer Backboard Test is a popular and efficient method for evaluating overall skill in tennis. It requires players to rally a tennis ball against a wall as many times as possible within a specific time limit. This test measures a combination of hand-eye coordination, stroke consistency, and reaction speed. Because it is easy to administer and requires minimal equipment, it is frequently used in physical education settings to assess a player's technical proficiency and progress.

31. (A) Height and weight
Body Mass Index (BMI) is a simple and widely used anthropometric tool for assessing body weight relative to height. It is calculated by dividing an individual's weight in kilograms by the square of their height in meters. The resulting value provides a general categorization of an individual's weight status, such as underweight, normal, or overweight. While it is easy to

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ANSWERS

1. (B) The process of assigning a numerical or quantitative value to an attribute.
Measurement involves the systematic process of assigning numerical or quantitative values to specific attributes or performances. It provides the objective data necessary for assessing progress and performance levels in physical education. By using standardized tools or instruments, instructors can precisely quantify variables such as time, distance, or frequency. This objective data serves as the foundation for subsequent evaluation and value judgments regarding an individual's achievement.

2. (A) To act as an instrument or tool for collecting data.
A test serves as a specific instrument or tool designed to collect relevant data about an individual's performance or attributes. It is the practical means through which measurement occurs, providing the necessary evidence for evaluation. In physical education, tests range from physical performance tasks to written examinations. These instruments must be carefully selected and administered to ensure that the data gathered is accurate and reliable for assessment.

3. (A) Both Statement I and Statement II are true.
Evaluation is inherently a qualitative process that involves making value judgments based on gathered data. It interprets results to determine the worth or progress of a student or athlete. Conversely, measurement is a strictly quantitative process focused on objectivity and numerical data collection. It remains free from judgment, providing only the raw figures. Together, these processes form a comprehensive assessment framework within physical education programs for monitoring achievement.

4. (D) Subjective evaluation
Subjective evaluation relies on the observer's personal judgment, expertise, and perception rather than standardized numerical data. When a coach assesses a player's shooting form by observation, they are interpreting quality through experience. This method is common for evaluating complex motor skills where numerical measurement is difficult. While it can be influenced by bias, it remains a vital tool for providing nuanced feedback and correcting technical errors during performance.

5. (A) P-2, Q-3, R-1, S-4
Assessment in physical education requires understanding several distinct components. A test is the specific instrument used to gather information, while measurement involves assigning a numerical score to the performance. Evaluation is the process of judging the merit of that performance based on objectives. Finally, formative evaluation provides ongoing assessment and feedback during instruction to improve learning. This structured approach ensures that progress is monitored effectively and goals are consistently being met by participants.

6. (B) To guarantee athletic scholarships for all participants.
Evaluation in physical education serves several critical functions, such as determining if educational objectives have been met and diagnosing specific student strengths or weaknesses. It also acts as a motivational tool to encourage better performance through feedback. However, providing a guarantee for athletic scholarships to every participant is not a realistic or primary goal. Such outcomes depend on external factors and high-level competitive results rather than standard program assessment.

7. (D) Reliability
Reliability is a fundamental principle in assessment that ensures a test produces consistent and stable results across repeated administrations. If an individual performs the same test multiple times under similar conditions, the scores should remain relatively constant. This consistency is essential for accurately tracking progress and making valid comparisons over time. High reliability indicates that the test is a dependable measure of the specific attribute being assessed in the testing program.

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strenuous physical activity. This physiological measure is a key indicator of respiratory health and lung function. Factors such as age, gender, and physical training levels significantly influence an individual's vital capacity, reflecting their overall cardiorespiratory efficiency and potential for endurance-based tasks.

40. (A) Spirometer
A spirometer is the primary instrument used to measure various lung volumes and capacities, including vital capacity. During the test, an individual inhales as deeply as possible and then forcefully exhales into the device. The spirometer records the volume of air displaced, providing an objective measure of respiratory function. This data is essential for assessing physical fitness levels and monitoring the respiratory health of athletes and students in physical education and clinical or research settings.

41. (C) Observing an athlete's body language before a competition.
Assessing psychological variables can be done through direct methods such as standardized questionnaires like the State-Trait Anxiety Inventory or the Group Environment Questionnaire. These tools provide quantitative data based on self-reporting. Conversely, observing an athlete's body language is considered an indirect method of assessment. While observation provides valuable behavioral cues, it is more subjective and less standardized than using validated psychological instruments to measure specific traits like anxiety, motivation, or team cohesion in a competitive environment.

42. (B) P-2, Q-4, R-1, S-3
Psychological assessment in sports involves various instruments designed to measure specific mental traits. Anxiety is often assessed using the Sport Competition Anxiety Test, while aggression levels can be determined using the Buss-Durkee Hostility Inventory. Team cohesion is measured by the Group Environment Questionnaire, and mental toughness is evaluated by an individual's ability to cope with pressure. These tools help coaches understand the psychological profile of their athletes to improve performance and develop appropriate mental skills training.

43. (D) Self-efficacy
Self-efficacy refers to an individual's belief in their own capability to execute the specific behaviors required to achieve a desired performance outcome. This psychological construct is task-specific and significantly influences motivation and persistence. High self-efficacy often leads to better performance because individuals are more likely to take on challenges and recover quickly from setbacks. It is a critical factor in athletic success and is frequently measured in sports psychology research to understand behavioral choices and effort.

44. (A) Both Statement I and Statement II are true.
Formative evaluation is an ongoing process conducted during the period of instruction to provide immediate feedback to both students and teachers. It helps identify learning gaps and allows for adjustments to the teaching method. In contrast, summative evaluation takes place at the conclusion of a course or unit. Its primary purpose is to assess the final achievement level and provide a basis for grading. Both types are essential for effective education and ensuring student progress toward goals.

45. (B) 1, 2 and 4 only
Cardiorespiratory endurance, muscular strength, and body composition are recognized as primary components of health-related physical fitness. These factors are directly linked to long-term health outcomes and the prevention of chronic diseases. Improving endurance enhances heart and lung function, while strength supports skeletal health. Maintaining a healthy body composition reduces metabolic risks. While agility and speed are important for athletic performance, they are categorized under motor or skill-related fitness components rather than health-related ones.

46. (D) Physical fitness is primarily health-related, while motor fitness is primarily performance-related.
Physical fitness and motor fitness are distinct concepts within the realm of physical education. Physical fitness primarily focuses on health-related components such as cardiovascular endurance, strength, and flexibility, which are necessary for general wellness. Motor fitness, however, relates to performance-based attributes

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student achievement levels within physical education and sports programs.

16. (B) promote overall wellness and the prevention of hypokinetic diseases.
Health-related fitness components are specifically designed to improve overall wellness and prevent the onset of hypokinetic diseases. These components include cardiovascular endurance, muscular strength, flexibility, and body composition. Improving these areas enhances daily functioning and reduces the risk of chronic health conditions like obesity and heart disease. Unlike performance-related fitness, the primary focus is on maintaining long-term health and functional capacity rather than achieving elite athletic success in competitive sports.

17. (B) 1-Repetition Maximum (1-RM) test
Muscular strength is the maximum amount of force a muscle or muscle group can exert against a resistance in a single effort. The 1-Repetition Maximum (1-RM) test is the standard method for measuring this attribute, as it determines the heaviest weight an individual can lift once with proper form. This differs from tests of endurance, which measure the ability to sustain repeated contractions or perform activities over an extended period without fatiguing.

18. (A) Cardiovascular endurance
The Harvard Step Test is a classic field test used to assess cardiovascular endurance and recovery heart rate. It requires participants to step up and down on a platform at a set pace for a specific duration. By measuring how quickly the heart rate returns to normal after exercise, the test provides an index of aerobic fitness. It is widely used due to its simplicity and ability to evaluate efficiency of the cardiorespiratory system.

19. (C) Sit-and-reach test
The sit-and-reach test is a common assessment tool used to measure the flexibility of the lower back and hamstring muscles. Flexibility in these areas is crucial for maintaining good posture and preventing lower back pain. During the test, individuals reach forward as far as possible while sitting with legs extended. This measure provides valuable information regarding the range of motion in the posterior chain, which is essential for both daily living and sports.

20. (A) 2, 5, 3, 1, 4
Developing a standardized skill test involves a logical sequence of steps to ensure scientific accuracy. The process begins by clearly defining the specific skill to be measured and then preparing detailed instructions for administration. A trial test is then conducted to identify potential issues, followed by item analysis to refine the tasks. Finally, norms are established by testing a large group, allowing for the interpretation of scores and establishing a frame of reference.

21. (C) Agility
Agility is the physical ability to change the direction and position of the body quickly and efficiently while maintaining balance and control. It requires a combination of speed, strength, and coordination to react to stimuli during movement. This component is essential in sports that involve rapid transitions and evasive maneuvers. Developing agility improves an individual's overall athletic performance and their ability to navigate complex movement patterns safely and effectively in dynamic athletic environments.

22. (B) P-4, Q-3, R-1, S-2
Evaluating different fitness components requires the use of specific, validated testing instruments. Muscular strength is often measured using a handgrip dynamometer, while speed is assessed through the 50-meter dash. Flexibility is typically evaluated with the sit-and-reach test to determine range of motion. Coordinative abilities, such as agility, are commonly measured using a shuttle run. This variety ensures a comprehensive assessment of an individual's physical capabilities and potential within various physical education and sporting activities.

23. (D) Vertical jump test
Coordinative abilities include various factors such as reaction time, balance, and rhythm, which are assessed through specialized tasks. The plate tapping test and wall toss test are excellent examples of measuring hand-eye coordination and speed of movement. While the shuttle run assesses agility, the vertical jump is primarily a measure of explosive muscular power rather than coordination. Therefore, it is categorized differently in a comprehensive fitness testing battery, focusing on force production over time.

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program remains effective and relevant to the needs of the participants for their optimal physical development.

54. (B) Shoulder width
Biacromial diameter is an anthropometric measurement used to determine skeletal width across the shoulders. It is measured as the distance between the two acromion processes of the scapulae. This measurement provides information about an individual's upper body build and is a key factor in somatotyping and growth assessment. Skeletal widths such as this are often used in sports science to understand physical suitability for different athletic disciplines and movement patterns requiring specific upper body mechanical structures.

55. (D) Mesomorphy
In the Heath-Carter method of somatotyping, mesomorphy is the component that represents the degree of muscularity and musculoskeletal development. A high mesomorphic score indicates a physique characterized by large bones and prominent muscles, often resulting in a rectangular or athletic appearance. This body type is frequently associated with success in sports requiring strength and power. The other components, endomorphy and ectomorphy, represent fatness and linearity, respectively, providing a complete description of the human physique for classification purposes.

56. (A) Psychological
Team cohesion is a critical variable that falls within the psychological domain of measurement in sports. It refers to the internal bonds and unity of a group as they work toward a common goal. Assessing cohesion helps coaches understand the social dynamics and emotional climate of a team. Specialized questionnaires are often used to quantify this attribute. Understanding these psychological factors is essential for optimizing team performance and ensuring a positive group environment for athletes in various sporting disciplines.

57. (A) 3, 1, 4, 2
The testing and evaluation process follows a specific logical sequence to ensure the accuracy and usefulness of results. It begins with selecting the most appropriate test for the intended purpose. Once chosen, the test is administered according to standardized procedures. Data is then collected during the performance, and finally, the results are interpreted to make meaningful conclusions about the individual's abilities. This systematic approach is fundamental for effective and reliable assessment in any physical education or sporting program.

58. (A) It does not differentiate between fat mass and muscle mass.
A major limitation of using Body Mass Index (BMI) as a measure of body composition is its inability to differentiate between muscle mass and fat mass. Because it relies solely on total weight and height, a highly muscular athlete may be classified as overweight or obese according to BMI scales. This lack of specificity can lead to inaccurate assessments of health risk in certain populations. More direct methods are required to determine actual body fat percentage for health evaluations.

59. (D) 50-yard dash
The AAHPERD Health-Related Physical Fitness Test focuses on components directly linked to long-term health and wellness. This battery typically includes items such as the one-mile run or walk to measure cardiovascular endurance, sit-ups for abdominal strength, and the sit-and-reach test for flexibility. These measures assess an individual's status regarding health risks. However, the 50-yard dash is not included in this specific battery, as it is primarily a measure of speed and performance-related motor fitness rather than health.

60. (B) 40-yard dash
The 40-yard dash is a standard test used to measure an individual's anaerobic power and maximal running speed over a short distance. Unlike endurance tests that rely on aerobic capacity, this sprint focuses on the explosive energy systems of the body. It is frequently used in sports like American football to assess acceleration and sprinting ability. The results provide valuable data on a player's capacity for high-intensity, short-duration performance, which is critical in many competitive team sports.

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calculate, it does not distinguish between muscle and fat mass, making it a general screening tool.

32. (D) 1, 2, 3 and 4
Anthropometric landmarks are specific, identifiable points on the human body used as reference markers for measurements. Points such as the acromion on the shoulder and the iliocristale on the hip are essential for accurate skeletal assessments. Similarly, the radiale and tibiale mediale provide markers for measuring limb segments. Utilizing these standardized landmarks ensures that measurements are consistent, reliable, and comparable across different studies and populations in physical education research and overall athlete physical profiling.

33. (B) The proportion of trunk length to total standing height.
Measurement of sitting height is used to assess body proportions, specifically the length of the trunk relative to the total standing height. This anthropometric data provides insight into an individual's physical development and skeletal proportions. By comparing sitting height to standing height, researchers can estimate leg length and identify specific body builds. Such information is often used in sports science to understand mechanical advantages related to trunk and limb ratios for various physical activities.

34. (A) Skinfold thickness
The Harpenden caliper is a specialized and highly precise instrument used to measure skinfold thickness at various sites on the body. These measurements are used to estimate the amount of subcutaneous fat, which is then used to calculate total body fat percentage. Because it maintains a constant pressure, it is considered a gold standard for field-based body composition assessment. Proper technique is essential to ensure accurate and reliable results when monitoring an individual's health status.

35. (C) Height and weight
The Ponderal Index is an anthropometric measure used to describe body build, specifically focusing on the relationship between height and weight. Unlike the Body Mass Index, it often uses the cube root of weight to provide a measure of leanness or stoutness. It is a useful indicator of physique and is frequently employed in somatotyping and growth studies. This index helps in categorizing different body types within a given population for health and performance research purposes.

36. (D) Linearity, fragility, and a lean body.
An ectomorph is characterized by a physique that emphasizes linearity, fragility, and a lean body structure. Individuals with this body type typically have long limbs, narrow shoulders, and very little muscle or fat mass. In the context of somatotyping, the ectomorphic component represents the degree of thinness. This physical build is often associated with success in activities requiring endurance or a high power-to-weight ratio, such as long-distance running or aesthetic sports like gymnastics.

37. (C) 1, 2, 3 and 4 only
Postural evaluation involves various tools and specific terminology to identify skeletal alignments. A plumb line is a common tool used to assess symmetry against a line of gravity. Deformities like kyphosis occur in the thoracic spine, while lordosis affects the lumbar region. The New York Posture Rating Chart provides a subjective yet structured method for grading these deviations. Understanding these concepts is essential for identifying and correcting postural issues in individuals to ensure overall musculoskeletal health and function.

38. (B) Blood pressure
A sphygmomanometer is the standard medical instrument used to measure arterial blood pressure. It consists of an inflatable cuff, a measuring unit, and a mechanism for inflation. By occluding the artery and slowly releasing pressure, the device allows for the determination of both systolic and diastolic values. This measurement is a vital indicator of cardiovascular health and is frequently used during physical assessments to monitor an individual's physiological state and response to physical exertion or stress.

39. (D) Exhale after a maximal inspiration.
Vital capacity is defined as the maximum volume of air that an individual can exhale from the lungs after a maximal inhalation. It represents the total amount of air available for gas exchange during

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level, and emotional state can influence this measurement. Highly trained athletes often have a much lower resting heart rate, reflecting a more efficient cardiovascular system. Consistently measuring heart rate provides valuable baseline data for monitoring health and assessing the impact of physical training programs on an individual's overall physiological condition and aerobic capacity over time.

69. (C) It is generally more valid for a specific group of students and curriculum.
A primary advantage of a teacher-made test over a standardized one is its increased validity for a specific group of students and a particular curriculum. Teachers can tailor the test items to align directly with the material covered and the unique needs of their class. While they may lack national norms, these tests provide a more relevant assessment of local learning outcomes. This customization allows for more accurate grading and feedback based on the actual instruction and objectives provided.

70. (B) Illinois Agility Run
The Illinois Agility Run is a widely recognized test used to assess agility in sports like football. It requires participants to navigate a course involving rapid changes of direction and sprinting around obstacles. This test provides a measure of how quickly an individual can maneuver their body while maintaining speed and control. Agility is a critical component for success in football, where players must frequently change direction to evade opponents or react to the movement of the ball during play.

71. (D) The cost, time, and equipment required for the test.
When selecting a test, administrative feasibility refers to the practical considerations involved in its implementation, such as cost, time, and required equipment. A test may be highly valid and reliable, but if it requires expensive laboratory technology or too much time to administer to a large group, it may not be feasible for a school setting. Balancing scientific rigor with these practical constraints is essential for the effective delivery of any physical education testing program in various educational environments.

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72. (A) 1, 2, and 3
Understanding the definitions of various physical fitness components is essential for accurate assessment. Muscular strength refers to the maximum force a muscle can generate, while endurance is the ability to sustain contractions over time. Speed involves the capacity to move the body or its parts quickly through space. These components are fundamental to overall physical performance. Conversely, flexibility refers to the range of motion around a joint, rather than the ability to change direction, which is defined as agility.

73. (C) Pulse pressure
Pulse pressure is a physiological measurement calculated as the difference between systolic and diastolic blood pressure readings. It represents the pressure change that occurs when the heart contracts and pumps blood into the arterial system. A normal pulse pressure is an indicator of healthy arterial function and cardiovascular efficiency. Monitoring this value during rest and after physical activity provides insight into how well the cardiovascular system is responding to stress and maintaining proper blood flow through the body.

74. (A) Accuracy and placement
A badminton skill test that requires players to hit shuttlecocks toward the corners of the court is primarily assessing accuracy and placement. These skills are essential for controlling the rally and moving the opponent into disadvantageous positions. While power and coordination are involved, the primary objective is the precise delivery of the shuttle to a specific target area. Measuring success in this task provides a clear indication of a player's technical control and strategic hitting ability on the badminton court.

75. (D) Achieving consistent high-level performance under pressure or adversity.
Mental toughness in athletes is best described as the ability to achieve consistent, high-level performance despite pressure, adversity, or challenging conditions. It involves a combination of resilience, focus, and unwavering self-belief. Athletes with high mental toughness can maintain their concentration and emotional control during critical moments of competition. This psychological trait is often a deciding factor

in success, as it allows individuals to overcome setbacks and perform at their best when it matters most in various sports.

76. (B) Height (cm) / (Weight (kg))$^{(1/3)}$
The Ponderal Index is a specific anthropometric calculation used to assess body build and leanness. It is determined by dividing an individual's height in centimeters by the cube root of their weight in kilograms. This measure provides a more detailed indication of physique than simple height-weight ratios. It is particularly useful in growth studies and somatotyping to distinguish between different body types within a population, helping researchers understand the mechanical and health implications of various physical body structures.

77. (D) 1, 2, 3, 4 and 5
Constructing a high-quality knowledge test involves several essential stages to ensure its effectiveness. The process begins with careful planning and the writing of relevant test items. A try-out phase follows, where the test is administered to a small group to identify any issues. Item analysis is then conducted to evaluate the difficulty and discrimination of each question. Finally, the test is prepared for its official use. These steps ensure the test is both reliable and valid for its purpose.

78. (D) Motor educability
Motor educability is the term used to describe an individual's inherent ability to learn new motor skills quickly and with relative ease. It represents the potential for skill acquisition rather than the current level of performance. Individuals with high motor educability can rapidly grasp complex movement patterns and adapt to new physical challenges. This concept is important for educators and coaches when identifying students who may be particularly adept at picking up new sports or activities within the program.

79. (A) Forehead
Skinfold thickness is measured at specific anatomical sites where subcutaneous fat is representative of total body fat. Common sites include the triceps on the back of the arm, the subscapular region below the shoulder blade, and the suprailiac area above the hip bone. These locations are chosen because they are easily accessible and provide reliable data for estimating body composition. In contrast, the forehead is not used for this purpose as it lacks significant subcutaneous fat deposits for assessment.

80. (B) Appearing to measure the intended variable to participants and observers.
Face validity refers to the degree to which a test appears to measure what it is intended to assess, particularly from the perspective of the participants and observers. While it is the least rigorous form of scientific validity, it is important for ensuring that the test is accepted and taken seriously by those involved. If a test looks relevant to the skill or attribute being measured, it can improve motivation and cooperation during the administration of the testing program.

81. (B) Forehand and backhand drive power and accuracy.
The Broer-Miller Tennis Test is a standardized instrument designed to assess a player's proficiency in forehand and backhand drives. It measures both the power and accuracy of these strokes by requiring participants to hit the ball into specific target areas on the court. This test provides a quantitative evaluation of technical skill under controlled conditions. By analyzing the results, coaches can identify specific strengths and weaknesses in a player's baseline game and develop targeted training programs for technical development.

82. (B) P-2, Q-4, R-1, S-3
Various sports use specific standardized tests to evaluate the technical skills of athletes. The Johnson test is a common battery for basketball, while the Russell-Lange test is used for volleyball. In football, the McDonald test is frequently employed to assess general playing ability through wall-volleying tasks. For field hockey, the Harbans Singh test provides a measure of dribbling and ball control proficiency. These specialized tools allow for objective assessment across different athletic disciplines in comprehensive physical education programs.

83. (C) Muscular development
Taking the circumference of the flexed upper arm is a common anthropometric measurement used to assess muscular development and hypertrophy. When the arm is flexed, the biceps and triceps

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muscles are contracted, providing an indication of their maximum girth. This measurement is particularly useful for tracking changes in muscle mass resulting from resistance training programs. It provides an objective way to monitor physical progress and evaluate the effectiveness of strength and conditioning interventions on an individual's overall muscular structure.

84. (D) A stable personality characteristic or predisposition to be anxious.
Trait anxiety refers to a stable personality characteristic or a predisposition to perceive a wide range of situations as threatening and to respond with state anxiety. Individuals with high trait anxiety are generally more prone to feeling nervous or apprehensive across different environments. Unlike state anxiety, which is a temporary emotional response to a specific event, trait anxiety is an enduring part of an individual's psychological makeup. Understanding this trait is essential for managing competitive stress in athletes effectively.

85. (A) 3 and 5 only
Measurement and evaluation are related but distinct processes in physical education. Measurement involves the collection of numerical data through tests, while evaluation uses that data to make qualitative value judgments. It is incorrect to say that evaluation is always quantitative, as it often includes subjective assessments. Additionally, norms are used to compare an individual to a peer group, whereas criterion-referenced tests compare performance to standards of mastery. Understanding these differences is crucial for accurate and fair assessment of students.

86. (B) Objective test
An objective test is a type of assessment construction where each question has only one clearly defined correct answer. This format, which includes multiple-choice and true-false questions, eliminates the influence of the scorer's personal bias or interpretation. Because the scoring is standardized, it is highly reliable and efficient for assessing large groups. Objective tests are particularly useful for measuring knowledge of rules, facts, and basic concepts in physical education, providing a fair and consistent way to evaluate learning outcomes.

87. (A) Both A and R are true and R is the correct explanation of A.
Somatotyping is a method of classifying the human physique into three primary components: endomorphy, mesomorphy, and ectomorphy. This classification is highly relevant in sports science because different body types are often associated with success in specific athletic disciplines. For example, a mesomorphic build is advantageous for strength, while an ectomorphic build benefits endurance. By understanding an individual's somatotype, coaches can provide better guidance on talent identification and tailor training to suit their natural physical characteristics and potential.

88. (A) Formative evaluation
Feedback provided to an athlete during the performance of a routine, such as in gymnastics, is a prime example of formative evaluation. The primary goal of this ongoing assessment is to identify errors and provide immediate guidance for improvement. Unlike summative evaluation, which occurs at the end of a program, formative evaluation happens during the learning process. This continuous loop of assessment and feedback is essential for refining technical skills and helping individuals achieve their optimal performance levels over time.

89. (C) A specific, identifiable point on the skeleton used as a reference for measurement.
In the field of anthropometry, a landmark refers to a specific, easily identifiable point on the human skeleton used as a reference for taking measurements. These points, such as the acromion or the iliac crest, ensure that data is collected from the exact same location every time. Using standardized landmarks is critical for maintaining the reliability and accuracy of skeletal measurements. This allows researchers to consistently compare physical characteristics across different individuals and populations in sports science studies.

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90. (A) Degrees Celsius or Fahrenheit
Body temperature is a fundamental physiological measure of the thermal state of the human body. The standard units of measurement for recording temperature are degrees Celsius or Fahrenheit. Maintaining a stable core temperature is essential for normal biological function and

progress and the program's effectiveness. This ensures that cognitive, psychomotor, and affective domains are all addressed. By being thorough, educators can make more informed decisions and provide better support for student development and achievement.

105. (C) The heart contracts to pump blood.
Systolic blood pressure represents the maximum pressure exerted on the arterial walls when the heart's ventricles contract to pump blood throughout the body. This value is recorded as the top number in a blood pressure reading. It is a key indicator of the workload of the heart and the health of the circulatory system. Monitoring systolic pressure is important during both rest and exercise, as excessive levels can indicate cardiovascular stress or other underlying health issues in an individual.

106. (A) Tackling a dummy
The AAHPERD Football Skill Test Battery is designed to measure fundamental techniques in American football. It typically includes items such as punting for distance, passing for accuracy, and ball control drills like dribbling. These items provide an objective measure of a player's technical proficiency. However, the battery does not include tackling a dummy, as this skill is more complex to standardize and often involves safety considerations that are outside the scope of a basic physical education skill test battery.

107. (A) Both A and R are true and R is the correct explanation of A.
The Harvard Step Test is considered a valid measure of cardiovascular fitness because it specifically evaluates how well the heart and lungs respond to exercise. The test focuses on the heart's recovery rate after a period of intense activity, which is a reliable indicator of aerobic efficiency. Individuals with higher fitness levels typically show a faster return to resting heart rate. By using recovery time to calculate a fitness index, the test provides a practical and objective assessment of health.

108. (B) Measuring understanding of rules, strategies, and health principles.
The primary purpose of constructing a knowledge test in physical education is to measure an individual's cognitive understanding of the subject. This includes their grasp of the rules of various sports, tactical strategies, and fundamental health and fitness principles. Unlike skill or fitness tests, which assess physical performance, knowledge tests evaluate the theoretical basis of physical activity. Ensuring that students have a strong foundation of knowledge is essential for their safe and effective participation in lifelong physical activities and healthy lifestyles.

109. (C) Complexity
When selecting a good test for physical education, several scientific and practical criteria must be considered. A high-quality test must be valid, meaning it measures what it intends to, and reliable, meaning it produces consistent results over time. Objectivity ensures that the scoring is free from personal bias. However, complexity is not a desirable criterion. In fact, simpler tests are often preferred because they are easier to administer, more time-efficient, and less prone to errors during the testing process.

110. (D) Body Mass Index (BMI) is the most accurate method for determining body composition.
Body composition refers to the relative percentages of fat, bone, and muscle mass in the human body. While skinfold measurements provide a common indirect method for assessment, hydrostatic weighing is often considered a gold standard due to its higher precision. It is incorrect to state that Body Mass Index (BMI) is the most accurate method for determining body composition. BMI is a simple weight-to-height ratio and fails to distinguish between lean muscle and fat, making it less precise than direct techniques.

111. (A) The ability to sustain a rally and hand-eye coordination.
The Miller Wall Volley test in badminton is primarily designed to assess a player's ability to sustain a rally and their overall hand-eye coordination. By requiring participants to repeatedly hit a shuttlecock against a wall within a specific time limit, the test measures their technical consistency and reaction speed. It provides a quantitative score that reflects a player's fundamental court skills. Because it is simple to administer and requires minimal space, it is a practical tool for evaluating badminton proficiency.

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to measure specific sport techniques. More comprehensive assessments like the McDonald Soccer Test follow, evaluating overall ability. Finally, the focus shifts to tactical gameplay, where skills are applied in dynamic, competitive environments to achieve strategic objectives for success.

98. (A) Team cohesion
The Group Environment Questionnaire (GEQ) is a validated psychological tool specifically designed to measure team cohesion in sports settings. It assesses how individual members perceive the unity and bond of their team toward both social and task-related goals. By evaluating factors such as individual attraction to the group and group integration, the GEQ provides a detailed profile of team dynamics. Coaches use this information to foster a more supportive environment and improve the collective performance of the group in various sports.

99. (C) Thoracic (upper back)
Kyphosis is a common postural deviation characterized by an exaggerated outward curvature of the thoracic or upper region of the spine. This often results in a "hunchback" appearance and can be caused by poor posture, muscle weakness, or skeletal issues. Identifying kyphosis through regular postural screenings is important for implementing corrective exercises to improve spinal alignment and prevent discomfort. Maintaining a healthy curvature in the upper back is essential for overall musculoskeletal health and efficient body mechanics during physical activity.

100. (D) Motor Educability Test
A test designed to measure an individual's readiness or potential to learn a new physical skill is known as a motor educability test. Unlike fitness or skill tests that assess current performance levels, motor educability focuses on the ease with which someone can acquire new movement patterns. This information is particularly useful for teachers when introducing unfamiliar activities, as it helps identify students who may require more or less time to achieve proficiency in new motor tasks and complex movements.

101. (C) Delivering oxygenated blood to muscles during prolonged activity.
Cardiorespiratory endurance refers to the capacity of the heart, lungs, and blood vessels to efficiently deliver oxygenated blood to working muscles during prolonged, low-to-moderate intensity activity. This component of physical fitness is vital for sustaining exercise and overall health. Improving cardiovascular endurance enhances the body's ability to recover after exertion and reduces the risk of metabolic diseases. Standardized tests like the 12-minute run are commonly used to assess this ability, providing an estimate of an individual's maximal aerobic capacity.

102. (B) P-4, Q-3, R-2, S-1
Postural evaluation involves identifying specific deviations from normal spinal and limb alignment. Kyphosis refers to an outward curve of the thoracic spine, while lordosis is an exaggerated inward curve of the lumbar region. Scoliosis is a lateral or sideways curvature of the spine. Deviations in the lower limbs include genu valgum, commonly known as knock-knees. Recognizing these terms is essential for accurate assessment and the development of corrective programs to improve overall posture and functional movement in various physical activities.

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103. (D) Handgrip dynamometer test
Static strength, also known as isometric strength, is the maximum force that a muscle or group of muscles can exert against an immovable object or without changing length. The handgrip dynamometer test is a classic measure of this attribute, as it records the force applied during a maximal squeeze of the hand. Unlike dynamic strength tests that involve movement, this assessment focuses on the peak force produced in a single, stationary effort. It is a reliable indicator of overall skeletal muscle strength.

104. (A) The evaluation should cover all stated objectives and aspects of the program.
In the context of evaluation, comprehensiveness implies that the assessment process should cover all stated objectives and essential aspects of the program. A comprehensive evaluation does not rely on a single test but uses multiple measures to gather a complete picture of an individual's

physical performance. Monitoring temperature is particularly important during exercise in extreme environments to prevent heat-related illnesses. Precise measurement allows for the assessment of an individual's health status and their physiological response to environmental stress and physical exertion.

91. (D) Competitive trait anxiety
The Sport Competition Anxiety Test (SCAT) is a standardized psychological instrument specifically designed to measure competitive trait anxiety in athletes. It assesses an individual's tendency to perceive competitive situations as threatening and to respond with varying levels of apprehension. By quantifying this trait, coaches and sports psychologists can better understand how an athlete might handle the stress of competition. This information is valuable for developing mental skills training programs that help athletes manage their anxiety and optimize performance.

92. (C) 1, 2, and 4
Muscular endurance is the ability of a muscle or group of muscles to perform repeated contractions against submaximal resistance over an extended period. Tests such as push-ups to failure, sit-ups for one minute, and the flexed-arm hang are all designed to measure this attribute. These tasks require individuals to sustain physical effort until fatigue occurs. Conversely, a 1-RM press measures maximal strength rather than endurance, making it inappropriate for assessing the ability to perform repetitive movements or sustain contractions.

93. (C) Weight (in kg) / [Height (in m)]^2
Body Mass Index (BMI) is a widely used anthropometric indicator calculated by dividing an individual's body weight in kilograms by the square of their height in meters. This simple formula provides a standardized measure of weight relative to height, allowing for the classification of individuals into categories such as normal weight, overweight, or obese. While it is a useful screening tool for health risks in large populations, it does not directly measure body fat or account for muscle mass.

94. (D) Heart rate is measured electrically (ECG), while pulse rate is the mechanical palpation of an artery.
While heart rate and pulse rate are often used interchangeably, there is a fundamental difference in how they are measured. Heart rate refers to the number of electrical contractions of the heart per minute, typically measured via an electrocardiogram (ECG) or a heart rate monitor. Pulse rate, however, is the mechanical measurement of the pressure wave felt in the arteries during each heartbeat, usually assessed through manual palpation at the wrist or neck. Both provide identical values in healthy individuals.

95. (A) Proving the test measures the specific skill it claims to measure.
In the construction of a skill test, establishing validity means providing evidence that the instrument accurately measures the specific motor skill it is intended to assess. A valid test ensures that the results reflect the actual ability of the individual in that particular area. Without validity, the data collected would be misleading and useless for evaluation. Establishing validity often involves comparing the new test with an existing gold standard or through expert review of the test items for accuracy.

96. (B) A gymnastics judge awarding points for artistry and form.
A subjective evaluation is one that relies on the personal judgment, expertise, and interpretation of the evaluator rather than strictly numerical or objective data. An example of this is a gymnastics judge awarding points based on the artistry, form, and execution of a routine. While structured criteria are used to guide the process, the final score still depends on the observer's perception. This type of evaluation is common in sports where aesthetic quality and technical form are paramount.

97. (A) 1, 4, 2, 3
Assessing physical development follows a chronological progression from basic motor skills to complex tactical gameplay. The sequence typically begins with evaluating fundamental actions such as catching and throwing. As proficiency increases, standardized skill tests like the AAHPERD basketball battery are used

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112. (B) 1, 2, and 3
Anthropometry is a non-invasive field of study focused on measuring the size, shape, and proportions of the human body. These measurements are used to understand physical development and suitability for different activities. For example, sitting height is used in conjunction with standing height to estimate leg length and skeletal proportions. Standardized procedures, such as measuring the right side of the body, are followed to ensure consistency and comparability across different research studies and athletic populations in sports science.

113. (B) Intrinsic motivation
Intrinsic motivation refers to the internal drive that leads an individual to engage in a behavior for the inherent enjoyment and satisfaction derived from the activity itself. This type of motivation is not dependent on external rewards such as trophies or praise. Athletes who are intrinsically motivated are more likely to persist in their training and experience greater long-term fulfillment. Understanding this drive is essential for educators and coaches who aim to foster a lifelong commitment to physical activity.

114. (A) Test-retest reliability
Test-retest reliability is a measure of the consistency of test scores when the same instrument is administered to the same individuals on two different occasions. A high correlation between the scores from both trials indicates that the test is stable over time and not overly influenced by random variables. This type of reliability is essential for ensuring that any changes in performance reflect actual progress rather than inconsistencies in the testing tool itself, providing a dependable basis for evaluation.

115. (C) The ventricles are relaxing and refilling with blood.
Diastolic blood pressure represents the minimum pressure in the arteries when the heart's ventricles are relaxing and refilling with blood between beats. This value is recorded as the bottom number in a blood pressure reading. It reflects the constant pressure exerted on the arterial walls when the heart is at rest. Monitoring diastolic pressure is a vital part of cardiovascular assessment, as elevated levels can indicate increased resistance in the blood vessels or other potential health concerns in an individual.

116. (D) Agility
The Illinois Agility Test is a standard field test specifically designed to measure an individual's agility. It involves a course that requires rapid changes in direction, sprinting, and maneuvering around several obstacles in a set pattern. The time taken to complete the course provides an objective measure of how efficiently the participant can coordinate their movement and maintain balance while moving at high speeds. This test is widely used in various sports to assess performance-related fitness and technical maneuverability.

117. (A) 1, 2, 3 and 4
Effective evaluation in physical education is guided by several key principles. It must begin with clear objectives to ensure purposeful assessment and should be a continuous and comprehensive process throughout the program. Evaluation is most successful when it is a cooperative effort involving both teachers and students. Furthermore, its ultimate goal should always be the improvement of learning and instruction. While standardized tests are useful, they are not the only tools used in a well-rounded and effective evaluation framework.

118. (B) Mesomorphic
In Sheldon's somatotyping system, a rating of 1-7-1 indicates a physique that is predominantly mesomorphic. The middle numeral, which represents the mesomorphic component, is at its maximum value, signifying extreme muscularity and bone development. The low values for the first and third numerals indicate minimal endomorphy (fatness) and ectomorphy (linearity). An individual with this rating would have a very powerful, athletic, and rectangular body shape, which is often highly advantageous in sports requiring significant strength, power, and physical robustness.

119. (D) Assess the alignment of body segments against a line of gravity.
A plumb line is a simple but effective tool used in postural evaluation to assess the alignment of various body segments against a vertical line of gravity. By hanging the line next to an individual,

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the evaluator can observe if specific landmarks, such as the ear, shoulder, hip, and ankle, fall in a straight vertical path. This allows for the identification of postural deviations like forward head position or excessive spinal curvatures, helping in the development of corrective strategies.

120. (A) Vertical jump test
The vertical jump test is a standard measure of explosive muscular power, which is the ability to exert maximum force in a very short period of time. It involves a dynamic movement where an individual jumps as high as possible from a standing position. This differs from static strength tests like handgrip dynamometry, which do not involve movement. Measuring vertical jump height provides valuable information about the anaerobic capacity and functional strength of the lower body muscles used in many sports.

121. (C) Item analysis
In the context of test construction, item analysis is the systematic process of evaluating individual questions to determine their difficulty and discriminatory power. Difficulty refers to the percentage of participants who answered correctly, while discrimination measures how well a question distinguishes between high and low performers. This analysis helps identify flawed items that may be too easy, too difficult, or ambiguous. By refining the test based on these findings, educators ensure the overall instrument is a more reliable and valid measure of knowledge.

122. (C) P-2, Q-1, R-4, S-3
Understanding different types of evaluation is essential for effective assessment. Norm-referenced evaluation focuses on ranking individuals against their peers, while criterion-referenced evaluation measures the mastery of specific skills against a standard. Formative evaluation provides continuous feedback during the learning process to guide improvement. Conversely, summative evaluation is conducted at the end of a program, such as a final exam, to determine overall achievement. Each type serves a unique purpose in monitoring student progress and program success in physical education and sports settings.

123. (D) Motor ability
Motor ability refers to the general, enduring, and largely innate physical traits that underlie an individual's capacity to perform various motor skills. These abilities, such as reaction time, balance, and coordination, serve as the building blocks for more specific learned actions. While skills are acquired through practice, motor abilities are more stable and dictate an individual's potential for athletic success. Recognizing these traits helps coaches and educators identify natural talents and tailor training to match an individual's inherent capabilities.

124. (B) Health-related fitness
The development of the Physical Best program marked a significant shift in the philosophy of fitness testing within physical education, moving away from the traditional performance-based AAHPERD Youth Fitness Test. The new focus prioritized health-related fitness components, such as cardiovascular endurance and body composition, which are essential for overall wellness and the prevention of chronic diseases. This transition emphasized the importance of lifelong physical activity and health maintenance for all students, rather than just identifying elite athletic talent.

125. (A) 1, 2 and 3 only
Performance-related or skill-related fitness components are those attributes necessary for achieving success in athletic and sporting activities. These include agility, which is the ability to change direction quickly, balance, which is the maintenance of equilibrium, and coordination, which involves the integration of senses and movement. While components like strength and endurance contribute to performance, they are primarily categorized as health-related because they are also essential for general well-being. Focusing on performance components helps athletes refine skills.

126. (D) A swayback or excessive inward curve of the lower back.
Lordosis is a postural deviation characterized by an exaggerated inward curvature of the lumbar or lower region of the spine, often referred to as swayback. This condition can be caused by muscle imbalances, such as weak abdominal muscles or tight hip flexors. Identifying lordosis

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is important for implementing specific corrective exercises to restore proper spinal alignment and reduce the risk of lower back pain. Maintaining a healthy lumbar curve is essential for effective weight distribution and efficient body mechanics.

127. (A) Both A and R are true and R is the correct explanation of A.
Evaluation is a much broader concept than measurement because it encompasses the entire process of making value judgments about an individual's performance. While measurement provides the essential quantitative data through numerical scores, evaluation interprets this information alongside qualitative observations. By considering both types of data, educators can determine the overall worth or progress of a student relative to specific objectives. This comprehensive approach ensures that the assessment process is meaningful and leads to effective program improvements and student development.

128. (B) A knowledge test assesses cognitive understanding, while a skill test assesses psychomotor performance.
The fundamental difference between a knowledge test and a skill test lies in the domain of learning they assess. A knowledge test is designed to measure cognitive understanding, such as the rules, strategies, and health principles associated with a physical activity. In contrast, a skill test evaluates psychomotor performance, focusing on an individual's ability to physically execute specific motor tasks or techniques. Both types of assessment are necessary in a comprehensive physical education program to ensure students are informed and capable.

129. (B) Side of the neck
The carotid pulse is a mechanical measurement of the heartbeat felt in the carotid artery, which is located on either side of the neck. It is one of the most common sites for manually assessing heart rate, especially during physical activity or in emergency situations. To find the pulse, one should gently place their fingers in the groove between the windpipe and the neck muscle. Accurate palpation provides immediate information about an individual's cardiovascular response to exertion or their overall physiological state.

130. (A) Aggression
The Buss-Durkee Hostility Inventory is a psychological assessment tool specifically designed to measure various forms of aggression and hostility in individuals. It evaluates different components, such as physical aggression, verbal aggression, and irritability, through a series of self-report items. In the context of sports, this inventory helps researchers and coaches understand an athlete's aggressive tendencies and how they might manifest during competition. Identifying these traits is important for developing strategies to manage behavior and maintain a positive environment.

131. (C) Power
Power is a physical fitness component that represents the combination of strength and speed, specifically the ability to exert maximum force in the shortest possible time. It is often referred to as explosive strength. Activities such as sprinting, jumping, and throwing heavily rely on this attribute. Developing power requires training both the muscular system and the nervous system to recruit motor units rapidly. It is a critical factor for success in many competitive sports that involve fast, explosive movements.

132. (B) 1, 2, and 3
Flexibility is the range of motion available at a joint or group of joints, and several tests are used to measure this component. The sit-and-reach test assesses lower back and hamstring flexibility, while the Kraus-Weber floor touch test provides a basic measure of trunk flexibility. For more precise measurements of specific joints, a goniometer is used to record the angle of motion in degrees. Conversely, the Harvard Step Test measures cardiovascular endurance rather than flexibility, making it inappropriate for this purpose.

133. (C) Predictive validity
Predictive validity is a type of scientific validity that indicates how well a test score can forecast an individual's future performance in a specific area. For example, if a motor ability test given to young athletes accurately predicts their later success in professional sports, the test has high predictive validity. This quality is highly valued in talent identification programs. Establishing predictive validity requires longitudinal studies

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that correlate initial test results with actual performance outcomes over an extended period of time.

134. (B) Using a questionnaire to assess perceived exertion.
Direct measurements of physiological phenomena involve the use of specialized instruments to gather objective data, such as a spirometer for vital capacity, a heart rate monitor for pulse, or a thermometer for body temperature. These tools provide precise numerical values. In contrast, using a questionnaire to assess perceived exertion is a subjective and indirect method. While it provides valuable information about how hard an individual feels they are working, it is based on personal perception rather than a direct biological measurement.

135. (D) Volleying against a wall.
The Brady Volleyball Test is a recognized instrument used to evaluate a player's general volleyball proficiency by measuring their ability to volley a ball against a wall. This test requires the participant to repeatedly hit the ball above a specific line within a set time limit. It assesses several key skills simultaneously, including hand-eye coordination, reaction speed, and technical consistency. Because it is simple to set up and provides a clear quantitative score, it is a practical tool for assessment.

136. (A) Bicristal diameter
Bicristal diameter is an anthropometric measurement used to determine the skeletal width of the pelvis. It is measured as the distance between the most lateral points of the iliac crests on the hip bones. This measurement provides important information about an individual's body build and skeletal proportions, which is a key factor in somatotyping and growth studies. Skeletal widths such as this are often used in sports science to understand physical suitability for different activities and to monitor physical development.

137. (A) 1, 2, 3, 4
Administering the Harvard Step Test follows a specific chronological sequence to ensure accurate results. The process begins with the participant stepping up and down on a platform at a set pace for five minutes. This is followed by a short rest period, during which pulse counts are taken at specific intervals to monitor recovery. Finally, these pulse counts are used to calculate a physical fitness index. This structured approach allows for a reliable and objective assessment of cardiovascular endurance.

138. (A) The classification of human body type or physique.
The term somatotype refers to a standardized system for classifying the human physique into three primary components: endomorphy, mesomorphy, and ectomorphy. Developed by W.H. Sheldon and later refined by Heath and Carter, this method provides a numerical description of an individual's body build based on fatness, muscularity, and linearity. Somatotyping is widely used in sports science for talent identification and research, as specific body types are often linked to success in different athletic disciplines and physical activities.

139. (D) Administrative feasibility
When selecting a test for use in physical education, administrative feasibility is a key consideration. This refers to how practical the test is to implement, considering factors such as ease of scoring, cost of equipment, and the ability to test large groups simultaneously. A test with high administrative feasibility is efficient and accessible for everyday use in schools. While scientific qualities like validity and reliability are paramount, the test must also be manageable within the constraints of time and resources available.

140. (B) 12-minute run/walk test
Cardiovascular endurance is the ability of the heart and lungs to sustain prolonged activity, and the 12-minute run/walk test is a classic tool for assessing this component. Participants attempt to cover as much distance as possible within the time limit. The results provide an estimate of maximal aerobic capacity (VO_2 max). This test is favored in physical education because it is simple to administer and can evaluate many individuals at once. Other tests, like the vertical jump, focus on different attributes.

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141. (C) Ability to learn new and complex motor skills quickly and easily.
Motor educability is the term used to describe an individual's innate potential to learn new and complex motor skills quickly and with ease. It is a measure of an individual's capacity for skill acquisition rather than their current performance level. People with high motor educability can rapidly master new movement patterns and adapt to unfamiliar physical challenges. Understanding this ability is important for educators when introducing new activities, as it helps identify students who may require less time to achieve proficiency.

142. (A) P-4, Q-1, R-3, S-2
Assessing physical fitness requires using specialized tests tailored to specific components. Cardiovascular endurance is often measured using the Harvard Step Test, while flexibility is assessed with the sit-and-reach test. Muscular strength can be evaluated through handgrip dynamometry, providing a measure of static force. Agility and coordinative abilities are commonly measured using the shuttle run. By utilizing this variety of validated instruments, physical educators can gain a comprehensive and objective understanding of an individual's overall physical capabilities and fitness status.

143. (A) Agility
Health-related fitness components are those directly linked to general well-being and the prevention of disease. These include cardiovascular endurance, body composition, and muscular strength. Improving these areas enhances daily function and long-term health. In contrast, agility is considered a performance-related or skill-related component. While important for success in many sports, agility is not essential for maintaining basic physical health. Therefore, it is categorized differently in a comprehensive fitness testing battery, focusing more on the requirements for skilled athletic performance.

144. (B) Content validity
A table of specifications is a tool used in test construction to ensure content validity. It acts as a blueprint that maps out the specific topics and cognitive levels that the test should cover based on the curriculum objectives. By following this table, educators ensure that the test items are representative of the material taught and that no important area is overlooked. This systematic approach provides a fair and comprehensive assessment of a student's knowledge and understanding of the subject matter.

145. (B) A field goal speed test.
The Johnson Basketball Test is a standardized battery designed to evaluate fundamental techniques in the sport. One of its key components is the field goal speed test, which measures a player's ability to quickly and accurately shoot at a basket within a set time limit. This assessment provides a quantitative measure of shooting proficiency under pressure. Other items in the battery typically focus on dribbling and passing. Coaches use this data to identify technical strengths and areas for improvement in athletes.

146. (A) A goniometer
A goniometer is a specialized instrument used in physical education and sports science to measure the range of motion at a joint, such as the knee or shoulder. It consists of two arms and a protractor that records the angle of movement in degrees. This objective measurement is essential for assessing flexibility and monitoring progress in rehabilitation or training programs. By providing precise data on joint mobility, a goniometer helps educators and therapists identify limitations and develop targeted stretching or corrective exercises.

147. (A) Both A and R are true and R is the correct explanation of A.
Norm-referenced evaluation is a method of assessment where an individual's performance is interpreted by comparing their score against the results of a specific peer group or population. The primary purpose of this approach is to determine an individual's relative rank or standing within that defined group. This information is particularly useful for classification, selection, and identifying competitive levels. By using norms, educators can provide context to raw scores and understand how a student's performance compares to others of similar age.

148. (D) Kyphosis
Postural deviations like rounded shoulders and a forward head position are typical indicators

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192. (C) 1, 2, and 4
Circumference measurements are anthropometric assessments of the girth of various body segments. Common sites for these measurements include the waist, head, and calf. These data provide information about body proportions, growth, and muscular development. In contrast, biacromial diameter is a skeletal width measurement rather than a circumference. Using standardized tools like a Gulick tape ensures that girth measurements are taken with consistent tension, providing reliable data for assessing health risks, monitoring shape changes, and evaluating training impact.

193. (B) Identify specific areas of weakness or deficiency.
The primary purpose of a diagnostic test in physical education is to identify specific areas of weakness, deficiency, or difficulty in an individual's performance. Unlike summative tests that measure final achievement, diagnostic assessments are typically conducted earlier to help guide instruction. By pinpointing exactly where a student is struggling, teachers and coaches can develop targeted interventions and corrective strategies. This helps ensure that all participants can overcome obstacles and achieve their potential in physical activities and skill development.

194. (A) Defensive Movement
The AAHPERD Basketball Skill Test is a standardized battery used to evaluate fundamental technical proficiency in the sport. It typically includes several items such as a control dribble, speed spot shooting, and passing accuracy. These components provide a quantitative measure of a player's offensive capabilities. However, the battery does not include a specific test for defensive movement. While defense is a critical part of the game, it is more difficult to standardize and measure objectively within this specific battery.

195. (C) They eliminate scorer bias and are highly objective.
A primary advantage of objective tests over subjective evaluations is the elimination of scorer bias and the high degree of objectivity they provide. In an objective test, such as a multiple-choice exam or a timed sprint, the scoring is standardized and does not depend on the personal opinion of the evaluator. This ensures that every participant is graded fairly and consistently. While subjective assessments can capture nuanced qualities like form, objective tests are more efficient and reliable for assessing large groups.

196. (D) Muscular endurance
Muscular endurance is defined as the ability of a muscle or group of muscles to perform repeated contractions against submaximal resistance over an extended period. This component of physical fitness is essential for activities that require sustained effort, such as cycling, rowing, or performing high-repetition exercises like push-ups. Unlike muscular strength, which focuses on a single maximal effort, endurance measures the capacity to resist fatigue. Developing muscular endurance improves functional capacity for daily tasks and enhances athletic performance.

197. (D) 1, 2, 3, 4 and 5
Proper test administration is crucial for ensuring the reliability and validity of the results. This involves maintaining a standardized environment, providing clear and consistent instructions to all participants, and ensuring a proper physical warm-up before performance. Furthermore, giving appropriate encouragement and scoring precisely according to established protocols are essential steps. By following these standardized procedures, the tester minimizes external variables that could negatively affect performance. This structured approach ensures that the data gathered is an accurate and fair reflection.

198. (B) Subjective evaluation of postural alignment
The New York Posture Rating Chart is a tool used for the subjective evaluation of postural alignment in individuals. It provides a structured method for an evaluator to observe and grade various body segments, such as the head, shoulders, spine, and feet, against a set of visual standards. While it involves personal judgment, the chart helps standardize the assessment process and provides a clear record of postural deviations. This information is valuable for identifying individuals who may benefit from exercises.

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basis for grading. An example of this is a teacher grading a final project or exam. Unlike formative evaluation, which provides ongoing feedback for improvement, summative evaluation summarizes the learning that has occurred and documents the extent of mastery.

156. (B) Endomorphy, Mesomorphy, and Ectomorphy
The Heath-Carter method of somatotyping provides three specific numerals that represent an individual's physique. The first numeral indicates endomorphy, which reflects the degree of softness and relative fatness. The second numeral represents mesomorphy, indicating muscularity and skeletal development. The third numeral stands for ectomorphy, describing linearity and fragility. Together, these three values provide a comprehensive numerical description of the human body build. This system is widely used in sports science to categorize athletes and study the relationship between physique and performance.

157. (A) 1, 2, 3 and 4
Selecting an appropriate test for physical education requires considering several critical scientific and practical criteria. A high-quality test must be valid, ensuring it measures the intended attribute, and reliable, producing consistent results over time. Objectivity is essential to minimize scorer bias. Furthermore, the test must be feasible, meaning it is practical to administer regarding time, cost, and equipment. While popularity may reflect widespread use, it is not a scientific criterion. Adhering to these principles ensures the assessment process is accurate.

158. (D) Maximum aerobic capacity (VO_2 max)
The beep test, also known as the multi-stage fitness test, is a widely used field test for estimating an individual's maximal aerobic capacity or VO_2 max. It requires participants to run between two lines 20 meters apart in time with recorded beeps that gradually increase in frequency. The test continues until the participant can no longer maintain the required pace. The final level reached provides a reliable estimate of cardiovascular endurance, which is essential for success in many endurance-based sports and health.

159. (A) Both Statement I and Statement II are true.
Reliability and validity are distinct but related qualities of a good test. A test can be reliable without being valid, meaning it produces consistent results but does not actually measure what it is supposed to. For example, a broken scale might give the same weight every time but always be ten pounds off. However, a test cannot be valid if it is not reliable; if the results are inconsistent, they cannot accurately reflect the attribute being measured. Both qualities are essential for use.

160. (B) Dyer Backboard Test
The Dyer Backboard Test is a standardized skill test for tennis that utilizes a backboard or wall for assessment. In this test, a player must rally a tennis ball against the wall as many times as possible within a specified time limit. This provides a quantitative measure of overall tennis ability, including stroke consistency, hand-eye coordination, and reaction speed. It is a highly practical and efficient tool for evaluating skill levels in a physical education setting because it requires minimal space.

161. (B) Pelvic or hip width
Bicristal diameter is an anthropometric measurement that specifically assesses the width of the pelvis. It is determined by measuring the distance between the most lateral points of the iliac crests on the hip bones. This skeletal measure is important for understanding an individual's body proportions and overall build. In sports science, such measurements are used for somatotyping and to evaluate physical suitability for various athletic activities. Accurate data collection requires using large sliding calipers and following standardized procedures.

162. (B) P-4, Q-3, R-2, S-1
Evaluating various physiological parameters requires the use of specialized medical and scientific instruments. Blood pressure is measured using a sphygmomanometer, while vital capacity is assessed with a spirometer to record lung volumes. Heart rate can be monitored using a stethoscope through auscultation of the chest. Furthermore, body temperature is recorded with a thermometer. Using the correct instrument for each measure is essential for obtaining accurate and reliable physiological

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formal gymnastics. During the mid-20th century, the emphasis shifted toward motor or performance-related fitness to identify athletic talent and ensure national readiness. More recently, the focus has moved toward health-related fitness components, prioritizing wellness and the prevention of chronic diseases for all individuals. This transition reflects a broadening understanding of physical activity.

178. (A) Consistent tension is applied during circumference measurements.
A Gulick tape is a specialized measuring instrument used for taking body circumference measurements. It features a spring-loaded attachment that ensures consistent tension is applied to the tape during every measurement. This is critical because applying too much or too little pressure can significantly affect the recorded girth, especially around soft tissues. By standardizing the tension, the Gulick tape improves the reliability and accuracy of the data collected. This ensures that measurements are comparable between different testers and sessions.

179. (C) A combined skill test that simulates game-like situations.
To provide a valid assessment of a player's ability in complex skills like dribbling, shooting, and passing under pressure, the most appropriate tool is a combined skill test that simulates game-like situations. While testing isolated skills is useful for beginners, it does not reflect how these techniques are applied in a dynamic environment. A comprehensive test that integrates multiple skills requires the participant to demonstrate technical proficiency and decision-making simultaneously. This provides a more accurate measure.

180. (D) Standardization
Standardization is the process of establishing consistent procedures for administering and scoring a test, as well as developing frames of reference, or norms, for interpreting the results. By following standardized protocols, educators ensure that every participant is tested under the same conditions, which is essential for reliability and fairness. Norms allow for a meaningful comparison of an individual's score against a larger representative population. This systematic approach is fundamental for turning raw data into useful information.

181. (C) Softness, roundness, and high relative fatness
An endomorph is characterized by a physique that emphasizes softness, roundness, and a high relative proportion of body fat. Individuals with this body type often have a wider waist, shorter limbs, and a more circular appearance. In the Heath-Carter somatotyping system, the endomorphic component reflects the degree of adiposity. While everyone possesses some level of endomorphy, a high score indicates a body build that is naturally more predisposed to fat storage. This physical structure influences performance.

182. (B) P-2, Q-1, R-4, S-3
Psychological assessment in sports involves using specialized tools to measure mental traits that influence performance. The Sport Competition Anxiety Test (SCAT) is used for anxiety, while the Group Environment Questionnaire (GEQ) evaluates team cohesion. Self-efficacy reflects an individual's belief in their specific capabilities, and achievement motivation is the drive for striving toward success. Understanding these variables provides coaches and athletes with valuable insights into the psychological profile of the team, helping to identify areas for development.

183. (D) 50-yard Dash
Speed is a performance-related fitness component defined as the ability to move the body or its parts quickly through space. The 50-yard dash is a standard field test used to measure maximal running speed over a short distance. Unlike tests of cardiovascular endurance or flexibility, the sprint focuses on the explosive power and quickness of the individual. Measuring the time taken to complete the dash provides an objective score that can be compared against norms to assess proficiency.

184. (A) Just above the hip bone.
The suprailiac skinfold is a specific anthropometric measurement taken just above the iliac crest, which is the top of the hip bone. This site is commonly used in body composition assessments to estimate subcutaneous fat in the abdominal region. Precise measurement requires using skinfold calipers to pinch a fold of tissue

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to which different testers obtain similar results when scoring the same performance. A highly objective test has clearly defined criteria and standardized scoring procedures that minimize the influence of personal bias or interpretation. This ensures that the results are fair and consistent, regardless of who is administering the assessment. High objectivity is essential for making valid comparisons and accurately tracking individual progress.

171. (D) Cooper's 12-minute run test
When selecting fitness tests for a specific population, such as sedentary elderly individuals, safety and feasibility are paramount. Tests like the chair stand, arm curl, and 6-minute walk are designed to measure functional fitness and are generally safe for this age group. In contrast, Cooper's 12-minute run test is a high-intensity cardiovascular assessment that is least appropriate for sedentary elderly persons. It places significant stress on the heart and joints, which may be dangerous for individuals.

172. (A) 1 and 3
Understanding fundamental physiological concepts is essential for assessing health and fitness. Blood pressure is accurately recorded using two values: systolic and diastolic pressure. Another key principle is that a resting heart rate typically decreases as an individual's cardiovascular fitness improves, reflecting a more efficient heart. It is incorrect to say that vital capacity increases throughout adulthood, as it generally declines with age. Furthermore, body temperature does not remain stable during exercise; it typically rises as the body produces heat.

173. (C) Identify deviations from normal body alignment for potential correction.
The primary goal of posture evaluation is to identify any deviations from normal body alignment so that potential skeletal issues can be corrected. By systematically assessing the symmetry and position of body segments, educators can detect problems like kyphosis, lordosis, or scoliosis early. This information is used to develop targeted corrective exercise programs to improve spinal health and functional movement. Maintaining proper posture is essential for reducing muscle strain, preventing long-term discomfort, and ensuring the efficient mechanical functioning.

174. (D) It is crucial for high-level performance in sports and physical activities.
Motor fitness is a distinct category of physical fitness that is primarily concerned with the attributes necessary for high-level athletic performance in sports. Its main components include speed, agility, power, and coordination. Unlike health-related fitness, which focuses on wellness and disease prevention, motor fitness enhances an individual's technical proficiency and competitiveness. While these components are important for all, they are particularly crucial for athletes who need to maneuver quickly and forcefully in dynamic environments for sporting success.

175. (A) Assessing general belief in the ability to cope with challenges.
The General Self-Efficacy Scale (GSE) is a psychological instrument designed to assess an individual's general belief in their overall capability to handle and cope with various life challenges and stressful situations. It measures a stable sense of personal competence rather than task-specific confidence. In physical education and sports, high general self-efficacy is often associated with greater resilience and a more positive approach to learning new skills. This assessment helps coaches understand the broad psychological mindset of athletes.

176. (B) Recording a long jump distance of 5.2 meters.
Measurement is the quantitative process of assigning a numerical value to a specific performance or attribute. An example of this is recording the exact distance of a long jump as 5.2 meters. This provides objective data that is free from personal judgment. Unlike evaluation, which interprets the data to determine quality, measurement focuses solely on the facts as observed through a testing instrument. These numerical scores are the essential building blocks for making informed assessments about progress.

177. (D) 3, 2, 1
The evolution of fitness testing in physical education has followed a distinct chronological path. Early programs in the 19th century focused on military-style calisthenics and

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People with high achievement motivation are typically goal-oriented and persistent when facing challenges. This motivation significantly influences how athletes approach training and competition. Understanding an individual's drive to succeed helps coaches provide the appropriate support and feedback to help them reach their potential performance.

207. (A) Biacromial width
Biacromial width is an anthropometric diameter measurement used to determine the distance between the two acromion processes of the shoulder blades. This skeletal measure provides information about the width of the upper body and is a key factor in assessing physique and body proportions. Measurements like this are often used in somatotyping to distinguish between different body builds. Accurate data collection requires using large sliding calipers and following standardized procedures to ensure skeletal widths are recorded consistently and reliably.

208. (B) Evaluating general soccer ability via kicking and ball control.
The main purpose of the McDonald Soccer Test is to evaluate general soccer playing ability through a series of kicking and ball control tasks performed against a wall. This test measures a combination of technical proficiency, hand-eye coordination, and reaction speed under time pressure. Unlike assessments that focus on a single isolated skill, the McDonald test provides a broader indication of a player's technical competence and overall proficiency. It is a practical and widely used tool for monitoring progress.

209. (B) To determine the extent to which educational objectives are being achieved.
The primary function of evaluation in an educational setting is to determine the extent to which the established educational objectives are being achieved. This process involves gathering and interpreting data to assess student progress and the effectiveness of the teaching program. Evaluation helps identify areas where learning is successful and where improvements are needed. By providing objective feedback on performance, evaluation ensures that instruction remains purposeful and aligned with the intended outcomes, facilitating optimal development of students.

210. (A) The pressure exerted on the arterial walls when the heart contracts.
Systolic blood pressure represents the maximum pressure exerted on the walls of the arteries when the heart's ventricles contract and pump blood into the circulatory system. This is recorded as the top number in a blood pressure reading. It is a critical indicator of cardiovascular health and the workload being placed on the heart. Monitoring systolic pressure during rest and physical activity provides valuable information about how well the body is managing stress and maintaining blood flow to muscles.

211. (C) Speed
Speed is a performance-related fitness component defined as the ability to perform a movement or cover a distance in a short period of time. It involves both the rapid contraction of muscles and the efficient coordination of movement patterns. Speed is critical for success in many sports, from sprinting in track and field to making quick bursts of movement in basketball or soccer. Measuring speed, such as through a 50-meter dash, provides an objective score of an individual's quickness.

212. (D) The most expensive and complex test is always the best choice.
Selecting an appropriate test requires balancing several scientific and practical criteria. While a test must be valid, reliable, and objective to ensure accurate results, it must also be feasible to administer within the available time and resources. It is incorrect to assume that the most expensive and complex test is always the best choice. In many cases, simpler field tests are more practical and provide equally valuable information for assessing performance and progress in a physical education setting.

213. (C) Muscular Strength
Muscular strength is the physical ability of a muscle or muscle group to exert a maximal force against an external resistance in a single effort. This component of physical fitness is fundamental for performing daily tasks and for success in many sports and activities. It is distinct from muscular endurance, which focuses on repeated contractions. Strength is often measured using tasks like a 1-RM lift or handgrip dynamometry.

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at a specific angle. Data from this and other sites are used in mathematical formulas to calculate total body fat percentage and monitor changes in physical status.

185. (C) Correlate highly with scores on another established, valid test measuring the same thing.
A test is considered to have high concurrent validity if its scores correlate highly with the results of another established and valid instrument measuring the same attribute. For example, if a new field test for body fat shows similar results to the gold standard of hydrostatic weighing, it has strong concurrent validity. This type of validity is important for proving that a more practical or less expensive test can provide results that are comparable to laboratory measurements.

186. (A) A player's dribbling and ball control skills.
The Harbans Singh Field Hockey Test is a standardized instrument specifically designed to assess a player's dribbling and ball control skills. These techniques are fundamental for maintaining possession and navigating the field during a game. The test typically involves a course that requires the participant to maneuver the ball through obstacles under time pressure. By providing a quantitative measure of technical proficiency, this test allows coaches to identify strengths and weaknesses in a player's fundamental skills and performance.

187. (A) Both A and R are true and R is the correct explanation of A.
Using specific skill tests for different sports is essential because motor skills are unique to each activity. A general motor ability test cannot accurately measure the technical proficiency required for a particular sport like tennis or football. For example, a high vertical jump does not guarantee success in soccer if the player lacks ball control skills. Therefore, valid assessment requires instruments that simulate the actual movement patterns and demands of the sport, ensuring results provide a true reflection.

188. (B) Components like speed, agility, power, and coordination.
Motor fitness, often referred to as performance-related or skill-related fitness, primarily consists of components that are necessary for high-level athletic success. These include speed, which is the ability to move quickly; agility, the capacity to change direction; power, explosive strength; and coordination, the smooth integration of senses and movement. While these attributes also contribute to general health, their primary function is to enhance technical proficiency in sports. Measuring these components helps athletes identify areas for optimization.

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189. (C) 120/80 mmHg
For a healthy young adult, a blood pressure reading of approximately 120/80 mmHg is considered the standard normal value. The first number represents systolic pressure, occurring when the heart contracts, while the second number is diastolic pressure, measured when the heart is at rest. Maintaining blood pressure within a healthy range is crucial for long-term cardiovascular health and efficient physical performance. Regular monitoring is a key part of health screening and can help identify potential issues like hypertension.

190. (D) The test must accurately differentiate between different skill levels.
A key principle in the construction of a standardized skill test is that it must accurately differentiate between individuals of varying skill levels. A well-designed test should result in higher scores for more proficient performers and lower scores for those with less skill. If a test is too easy or too difficult for everyone, it fails to provide meaningful information for evaluation. This discriminatory power is essential for ensuring the test is a valid measure of technical ability.

191. (A) Measurement
Measurement is the quantitative process of assigning a numerical score to a performance. When an individual makes 8 out of 10 free throws, the number "8" represents the measured value of their performance. This provides an objective piece of data that describes their current shooting proficiency. This raw score becomes part of the evaluation process only when it is interpreted against a standard or objective, such as determining if "8 out of 10" meets the criteria for mastery.

data, which is fundamental for assessing the health of individuals.

163. (C) A high level of innate athletic talent
Mental toughness is a psychological construct that describes an individual's ability to perform at their best under pressure and overcome adversity. It includes key traits such as high self-belief, unshakable focus, and the resilience to bounce back from setbacks. While these mental attributes are crucial for success, they are distinct from innate physical or athletic talent. An athlete can be mentally tough regardless of their natural biological predispositions. Mental toughness is often developed through experience and specific training.

164. (D) A test provides data, while evaluation involves interpreting that data to make a judgment.
The fundamental difference between a test and evaluation lies in their specific roles within the assessment process. A test is an instrument or tool used to collect data about a particular attribute or performance. Evaluation, however, is a broader process that involves interpreting that data and making a value judgment about the individual's progress or achievement. While a test provides the raw evidence, evaluation gives that evidence meaning by relating it to specific objectives and standards within the program.

165. (A) 1 and 5 only
It is important to distinguish between various concepts in physical education to ensure accurate assessment. Motor ability refers to general, innate traits, while motor skill refers to specific, learned actions acquired through practice. Therefore, stating they are identical is incorrect. Additionally, individuals vary significantly in their natural motor abilities; assuming everyone has the same level of ability is also false. Conversely, motor fitness focuses on performance, while physical fitness is a broader term encompassing health-related components for overall wellness.

166. (B) Classification
Classification is a key function of evaluation that involves organizing students or athletes into homogenous groups based on their skill level, physical ability, or other relevant characteristics. This process ensures that individuals are practicing and competing with others of similar proficiency, which enhances safety and promotes more effective learning. By grouping individuals appropriately, teachers and coaches can tailor their instruction to meet the specific needs of each group. Classification is essential for maintaining fairness and maximizing development of participants.

167. (A) Both A and R are true and R is the correct explanation of A.
Constructing a standardized skill test is a rigorous process that requires careful development to ensure scientific accuracy. For a test to be effective, it must demonstrate high levels of reliability, validity, and objectivity. Furthermore, establishing norms is essential for providing a frame of reference for interpreting individual scores. Without these standard qualities, a test cannot provide meaningful or comparable data about a person's abilities. Adhering to these principles ensures that the assessment tool is a dependable measure.

168. (A) The back of the upper arm.
The triceps skinfold is a common anthropometric measurement taken at the back of the upper arm, midway between the shoulder and the elbow. It is used to estimate the amount of subcutaneous fat in that specific area, which serves as an indicator of total body fat percentage. Proper technique involves using specialized calipers to pinch a fold of skin and fat away from the underlying muscle. This measurement is a staple in body composition assessments due to its reliability.

169. (C) Active flexibility
Active flexibility refers to the range of motion that an individual can achieve around a joint using only their own muscle contractions, without any external assistance or force. This type of flexibility is a better indicator of functional movement and is essential for most physical activities and sports. It requires a combination of muscle strength in the agonists and length in the antagonists. Developing active flexibility through regular exercise helps improve overall mobility, enhances athletic performance, and reduces risk of injuries.

170. (A) Objectivity (or inter-rater reliability)
Objectivity, also known as inter-rater reliability, is a critical quality of a test that indicates the degree

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199. (D) Physical fitness is health-related, while motor fitness is performance-related.
The primary difference between physical fitness and motor fitness lies in their focus and application. Physical fitness is largely concerned with health-related components such as cardiovascular endurance, strength, and body composition, which are essential for general well-being and preventing disease. Motor fitness, conversely, focuses on performance-related attributes like agility, speed, power, and coordination, which are crucial for success in competitive sports. While they are related, physical fitness is fundamental for everyone, whereas motor fitness is for athletic achievement.

200. (A) Beep Test (Multi-stage fitness test)
A test that requires participants to run between two lines, often set 10 or 20 meters apart, in response to recorded signals that gradually increase in frequency is known as the beep test or multi-stage fitness test. This assessment is designed to measure cardiovascular endurance and estimate maximal aerobic capacity (VO_2 max). As the intervals between beeps shorten, participants must increase their running speed to reach the line on time. The test continues until the individual can no longer maintain pace.

201. (C) To create anxiety and stress among students.
Testing and measurement serve several positive functions in physical education, such as providing an objective basis for grading, assessing program effectiveness, and motivating students by showing their progress. These processes help improve learning and instruction. However, creating anxiety and stress among students is not a legitimate or productive reason for testing. Excessive pressure can negatively impact performance and discourage participation. A well-designed assessment program should be used as a supportive tool to enhance the overall educational experience.

202. (A) Head of the radius bone at the elbow
In anthropometry, the radiale is a skeletal landmark located at the most proximal point of the head of the radius bone, which is on the lateral side of the elbow. This specific point is used as a reference for taking various measurements, such as arm length and segment proportions. Identifying the radiale correctly is essential for ensuring that anthropometric data is collected consistently and accurately. Standardized landmarks like this are fundamental for reliable skeletal assessment and research in sports science.

203. (D) Iowa-Brace Test
The Iowa-Brace Test is a well-known instrument designed specifically to assess motor educability in individuals. It consists of a battery of twenty stunts or movements that measure the ease and speed with which a person can learn and execute unfamiliar motor tasks. Unlike fitness tests that measure strength or endurance, the Iowa-Brace Test focuses on the potential for skill acquisition. This information is valuable for physical educators when planning instruction and identifying students who may pick up patterns.

204. (B) Dual-energy X-ray absorptiometry (DEXA)
While skinfold measurements and Body Mass Index (BMI) are common indirect methods for estimating body composition, Dual-energy X-ray absorptiometry (DEXA) is considered a more direct and highly accurate measure. DEXA scans provide a detailed assessment of bone mineral density, lean muscle mass, and fat tissue throughout the entire body. This technology is often used as a reference standard in research and clinical settings. Unlike field tests, DEXA provides a precise and comprehensive picture of physical makeup.

205. (C) Norm-referenced
Ranking students from best to worst based on their performance in a 100-meter sprint is an example of norm-referenced evaluation. In this approach, an individual's score is interpreted by comparing it to the scores of others in the same group. The primary goal is to determine relative standing and competitiveness rather than mastery of a specific skill level. This method is useful for classification and selection in sports, as it provides a clear indication of where each participant stands.

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206. (D) Need to achieve success and avoid failure.
Achievement motivation is a psychological concept concerned with an individual's internal drive to achieve success and avoid failure in competitive situations. It reflects the desire to reach high standards and excel in performance.

of kyphosis, which is an exaggerated outward curvature of the thoracic or upper spine. This condition often results from prolonged poor posture or muscle imbalances. Regular postural screenings in physical education programs are essential for identifying these issues early. By recognizing the signs of kyphosis, educators can implement specific corrective exercises and education to help individuals improve their skeletal alignment, enhance functional movement, and prevent potential long-term discomfort.

149. (C) Balance
Balance is the physical ability to maintain the body's equilibrium while either stationary or moving. It requires the integration of sensory information from the eyes, ears, and muscles to adjust posture and prevent falling. This component is essential for all physical activities, from simple walking to complex athletic maneuvers. Improving balance enhances overall stability and coordination, reducing the risk of injury. It is often categorized as a performance-related fitness component and is measured using various tasks like the stork stand.

150. (B) Collecting data through measurement.
A fundamental and key step in the evaluation process is collecting accurate data through measurement. Evaluation cannot occur without objective information about an individual's performance or attributes. This data is gathered using various tools and tests, such as stopwatches, measuring tapes, or standardized questionnaires. Once the data is collected, it can be interpreted against specific objectives or norms to make meaningful judgments about progress and achievement. This systematic collection of evidence is the foundation of any effective assessment program.

151. (D) Reaction time
Motor ability refers to the general and largely innate traits that provide the foundation for an individual's physical performance. An example of a motor ability is reaction time, which is the speed at which someone responds to a stimulus. Unlike specific motor skills like throwing or serving, which are learned through practice, motor abilities are more stable and dictate a person's overall potential for skill acquisition. Understanding these underlying traits helps in assessing an individual's natural capabilities and guiding them toward suitable activities.

152. (C) 1, 2, and 4
Muscular power is the ability to exert maximum force in a very short period, and several tests are used to measure this explosive attribute. The vertical jump and standing broad jump are standard measures of lower body power, while the medicine ball throw assesses power in the upper body. These tasks require a single, maximal effort. While a sprint like the 50m dash involves power, it is primarily a measure of speed. Utilizing a variety of these tests provides a comprehensive assessment.

153. (C) Has a strong desire to succeed in competition.
An individual with high achievement motivation possesses a strong internal drive to strive for success and achieve excellence in competitive situations. They are typically goal-oriented and persistent, even when facing significant challenges or setbacks. This psychological trait is a key determinant of athletic success, as it motivates individuals to invest the time and effort necessary to improve their performance. People with high achievement motivation often seek out challenging tasks and derive great satisfaction from overcoming obstacles and reaching objectives.

154. (A) To assess the accuracy of the short serve.
The primary purpose of the French-Stalter Badminton Test is to assess the accuracy of a player's short serve. The short serve is a critical tactical skill in badminton, especially in doubles play, where precision is required to prevent an aggressive return. This standardized test uses specific target areas on the court to provide a quantitative measure of a player's proficiency. By evaluating performance in this task, coaches can provide objective feedback and identify technical improvements needed for a more effective serve.

155. (D) A teacher grading a final project at the end of a unit.
Summative evaluation is a type of assessment conducted at the conclusion of a period of instruction, such as at the end of a course or unit. Its primary purpose is to determine the final achievement level of the student and provide a

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Developing strength enhances performance, supports skeletal health, and reduces injury risk.

214. (B) Volleyball
The Russell-Lange Test is a standardized skill test designed to assess technical proficiency in volleyball. It typically includes items that measure fundamental skills such as serving and passing accuracy. These tasks are performed under controlled conditions to provide an objective score of a player's ability. This test is a valuable tool for coaches and physical educators to monitor progress, identify technical deficiencies, and provide targeted feedback to improve performance. Using standardized tests ensures assessments are reliable across individuals.

215. (D) Joint range of motion (flexibility)
A goniometer is a specialized medical and scientific instrument used to measure the range of motion at a specific joint, which is a key indicator of flexibility. It consists of a protractor with two arms that are aligned with the body segments to record the angle of movement in degrees. This objective measurement is essential for identifying limitations in mobility and tracking progress in training or rehabilitation programs. Precise data on joint range of motion helps in developing effective exercises.

216. (D) Statement I is false, but Statement II is true.
Body Mass Index (BMI) is an anthropometric measure used to assess body build or stoutness by relating weight to height. It provides a general categorization of weight status. Conversely, the Ponderal Index is also a measure of body build or leanness rather than body composition. Body composition refers to the relative percentages of fat, muscle, and bone, measured using methods like skinfold calipers. Therefore, the statement that the Ponderal Index measures body composition is false, but BMI description is true.

217. (C) Explosive power
Jumping as high as possible from a standing start is the standard method for measuring explosive muscular power in the lower body. This task requires the participant to exert maximal force in a very short period of time to achieve height. Power is a combination of strength and speed and is essential for activities like sprinting and sports that involve jumping. The vertical jump test provides an objective score that reflects an individual's anaerobic power and motor unit recruitment ability.

218. (A) Evaluating item difficulty and discriminatory power of questions.
In the construction of a knowledge test, item analysis is the systematic process used to evaluate the effectiveness of individual questions. It involves calculating the difficulty level, which is the percentage of people who answered correctly, and the discriminatory power, which is the question's ability to distinguish between high and low-performing students. This analysis helps identify flawed or ambiguous items that need to be revised. By refining test items, educators ensure that the final instrument is reliable.

219. (D) Just below the inferior angle of the shoulder blade
The subscapular skinfold is a specific anthropometric measurement taken just below the inferior angle of the shoulder blade, or scapula. It is a common site used in body composition assessments to estimate subcutaneous fat on the trunk of the body. Accurate measurement requires the tester to pinch a fold of skin and fat at a 45-degree angle following the natural cleavage lines. This data is then used in specialized formulas to calculate total body fat percentage.

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220. (B) Mental Toughness
Mental toughness is a psychological variable that represents an individual's ability to remain persistent and demonstrate "stick-to-it-iveness" in the face of challenges and adversity. It involves a combination of resilience, unwavering focus, and high self-belief. Athletes with high mental toughness are more likely to stay committed to their goals despite setbacks or pressure during competition. This trait is a key factor in long-term athletic success, as it allows individuals to maintain performance and recover quickly from failures.

221. (C) 1-RM bench press
Coordinative abilities involve the smooth and efficient integration of various physical factors such as reaction time, balance, and rhythm. Tests like the Burpee test, plate tapping, and stick balance are used to assess these complex qualities. In contrast, a 1-RM bench press is a

270. (D) Physical fitness
Physical fitness is characterized by a state of health and well-being that provides the energy necessary for daily life. It ensures that an individual can complete regular tasks with vigor while still having sufficient energy reserves for leisure pursuits. This concept encompasses both health-related and skill-related components to support a functional and highly active lifestyle.

271. (C) Agility
Health-related fitness consists of components that are vital for overall health and the prevention of diseases. These include cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Agility, while important for sports performance, is considered a skill-related fitness component rather than a primary indicator of general physical health and the prevention of chronic diseases.

272. (B) Muscular endurance
Muscular endurance is the capacity of a muscle group to perform repeated contractions or sustain a specific position over a period of time. A sit-up test performed to exhaustion or within a set time limit specifically measures this ability. It differs from muscular strength, which focuses on the maximum force a muscle can exert in one effort.

273. (D) The range of motion at a joint.
The sit-and-reach test is a standard assessment used to evaluate flexibility, specifically in the lower back and hamstring muscles. Flexibility is defined as the range of motion available at a particular joint. Maintaining adequate flexibility is essential for functional movement and reducing the risk of musculoskeletal injuries during physical activities and common daily life tasks.

274. (A) supply oxygen during sustained physical activity.
Cardiorespiratory endurance refers to the integrated ability of the heart, lungs, and blood vessels to deliver oxygen to working muscles during prolonged exercise. This component is a critical indicator of overall cardiovascular health. Tests such as distance runs or step tests are frequently used to measure how efficiently these systems function during sustained physical exertion and exercise.

275. (C) provide data for personalized exercise design and health education.
Conducting health-related fitness tests allows for the collection of objective data regarding an individual's physical status. This information is primarily used to create personalized exercise programs tailored to specific needs and to educate people about their health. Such assessments are essential for promoting long-term physical activity and preventing the development of various lifestyle-related health conditions.

276. (A) Flexibility
Flexibility is the fitness component that describes the range of motion available at a joint. Using a goniometer allows for the precise measurement of the angle of flexion or extension, providing a quantitative value for this attribute. This level of precision is often required in clinical or sports science settings to monitor joint health and specific movement patterns.

277. (D) Balance
The stork stand is a specific test used to assess balance, which is a key coordinative ability. It requires the participant to maintain a stable upright position while standing on one leg, challenging the body's ability to maintain its center of gravity. Balance is essential for successful performance in many sports that require stability and precise movement control.

278. (B) Timing performance over a short-distance sprint.
Speed is assessed by measuring how quickly an individual can travel a specific, short distance. Standard protocols involve timing a participant during a sprint, such as a 30-meter or 50-meter dash. This measurement accounts for factors like reaction time and acceleration, which are crucial for high-performance athletic activities requiring rapid movement over very brief intervals.

279. (C) Muscular endurance and cardiovascular endurance.
Testing protocols distinguish between muscular endurance and cardiovascular endurance. Muscular endurance focuses on the ability of specific muscle groups to perform repeated

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229. (C) A high level of cardiovascular fitness.
A resting heart rate of 50 beats per minute in an adult generally indicates a high level of cardiovascular fitness. Highly trained athletes often have lower heart rates because their hearts are more efficient at pumping blood, requiring fewer beats per minute to deliver oxygen to the body. This adaptation is a result of consistent aerobic training. Monitoring resting heart rate is a simple and effective way to assess an individual's cardiovascular status and to monitor training impact over time.

230. (B) Evaluation
Deciding that a specific measurement, such as a time of 11.2 seconds in a sprint, is "excellent" is an example of evaluation. While the time itself is the measured value, the interpretation of that value as "excellent" involves making a value judgment based on specific standards, norms, or objectives. This judgment provides context and meaning to the raw data collected through measurement. Evaluation is the final step in the assessment process where educators determine the overall success of performance.

231. (D) Coordination
Coordination is the physical ability to integrate multiple sensory inputs, such as sight and sound, with muscle movement to perform complex tasks smoothly and efficiently. It requires the harmonious functioning of the nervous and muscular systems. This component is essential for success in almost all physical activities and sports, from catching a ball to performing a gymnastics routine. Improving coordination enhances overall technical proficiency and movement control. It is often categorized as a performance-related fitness component in various batteries.

232. (A) They often lack established reliability, validity, and norms.
A key characteristic of teacher-made tests, when compared to standardized tests, is that they often lack established scientific reliability, validity, and national norms. While they are highly relevant to the local curriculum and a specific group of students, they are not developed with the same level of rigorous statistical testing as standardized instruments. This means their results are less comparable across different populations. However, they remain a vital tool for classroom assessment and providing feedback in the local setting.

233. (C) Body proportions, such as the ratio of leg length to trunk length.
Measurements of standing height and sitting height are used together in anthropometry to determine an individual's body proportions, such as the ratio of leg length to trunk length. This information is valuable for understanding physical development and suitability for different athletic activities. For example, some sports may benefit individuals with longer legs, while others may favor a longer trunk. By analyzing these proportions, coaches and scientists can gain a better understanding of an individual's potential mechanical advantages.

234. (A) Task-specific self-efficacy
Task-specific self-efficacy refers to an individual's belief in their own capability to successfully perform a particular activity or task, such as shooting a free throw in basketball. Unlike general self-esteem, which is a broad sense of worth, self-efficacy is limited to a specific domain of performance. This psychological construct is a major determinant of motivation and persistence. High self-efficacy in a task often leads to better results because individuals are more confident, focused, and likely to invest effort.

235. (D) VO_2 max (aerobic capacity)
The Cooper 12-minute run/walk test is a popular field assessment used to estimate an individual's maximal aerobic capacity or VO_2 max. Participants attempt to cover as much distance as possible within the 12-minute time limit. The total distance covered is then used in a mathematical formula to provide a reliable estimate of cardiovascular endurance. This test is favored in physical education because it is simple to administer to large groups and provides an objective measure of overall aerobic fitness.

236. (B) 50-yard dash - Cardiovascular Endurance
Various fitness tests are designed to measure specific components of physical health and performance. The sit-and-reach test is a classic measure of flexibility, and vertical jumps assess explosive power. Handgrip dynamometry is a recognized tool for measuring static muscular

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against established standards to determine its overall value and meaning within a specific context.

252. (A) To assign a numerical value to an observed performance or attribute.
Measurement refers to the systematic process of collecting quantitative data by administering a specific test. Its main objective is to assign a numerical value or score to a particular attribute or performance. This process transforms physical actions into objective data points, such as time or distance, which are later interpreted during the evaluation stage.

253. (C) Evaluation
When a performance score is compared against established norms to assign a qualitative judgment, the process is defined as evaluation. In this specific scenario, determining that a sit-up score is excellent involves interpreting measured data to assess its value. This step goes beyond simple data collection to provide meaningful insight for the individual student.

254. (D) provide a basis for objective and evidence-based decision-making.
The interconnected sequence of testing, measuring, and evaluating provides a scientific framework for physical education. This comprehensive approach ensures that decisions regarding player selection, student classification, and program effectiveness are grounded in objective data. By using these tools, practitioners can move away from subjective observations toward more reliable, evidence-based pedagogical and athletic training strategies.

255. (C) A test is a tool or procedure, while measurement is the act of using that tool to gather data.
A test is the specific instrument, tool, or procedure used to acquire information, such as a written exam or a physical task. Measurement is the actual administration of that test to gather numerical data. While the test provides the necessary framework, measurement is the active process of assigning scores based on the physical performance observed.

256. (B) Validity
Validity is considered the most essential principle when selecting a test for physical education. It ensures that the chosen instrument accurately measures the specific attribute it is intended to assess. For example, a test designed for leg power must measure power rather than endurance to be considered valid for its specific intended purpose and outcome.

257. (D) Objectivity
Objectivity is a specific component of reliability that measures the degree of agreement between different testers. When multiple individuals administer the same test to the same subject and obtain consistent, nearly identical results, the test demonstrates high objectivity. This quality is crucial for minimizing subjective bias and ensuring that the results remain fair and accurate.

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258. (A) To provide a standardized basis for interpreting an individual's score.
Norms serve as a standardized framework used to interpret individual scores by comparing them to a large, representative sample group. They provide the context necessary to determine whether a performance is average, above average, or below average. This comparison is a vital step in the evaluation process to give numerical data objective and useful meaning.

259. (C) Collecting and scoring the data.
The systematic process of evaluation follows a specific sequence of actions to ensure accuracy. Once the appropriate tests have been selected and administered to the participants, the immediate next step is the collection and scoring of the resulting data. This quantitative information is then prepared for the subsequent stages of professional analysis and qualitative data interpretation.

260. (A) Reliability
Reliability indicates the consistency and repeatability of a test over time under similar conditions. If an athlete achieves significantly different results on the same test on consecutive days without any change in their physical condition, the test is unreliable. A reliable measurement must produce stable results to be useful for tracking athletic progress or making informed decisions.

muscularity and bone development. Individuals with a high mesomorphic rating, such as a 1-7-1, typically have a powerful, athletic appearance with broad shoulders and a rectangular body shape. This body build is often highly advantageous in sports that require significant strength, power, and physical robustness. Understanding an individual's mesomorphic component helps coaches guide them toward suitable sporting activities and tailor their training.

245. (C) Training the testers to ensure consistency.
A key step in administering a large-scale testing program is to provide thorough training for all testers to ensure high levels of consistency and objectivity. When multiple individuals are responsible for scoring, it is essential that they follow the same standardized procedures and interpret performance in the same way. Proper training minimizes scorer bias and reduces variability in the results, which is critical for making valid comparisons. This structured approach ensures the overall reliability and accuracy of testing.

246. (B) Wingate test
The Wingate test is a recognized laboratory assessment used to measure an individual's anaerobic power and capacity. It typically involves 30 seconds of maximal-intensity pedaling on a cycle ergometer against a set resistance. The results provide an objective measure of the explosive energy systems of the body, which are essential for high-intensity, short-duration activities. Unlike endurance tests that rely on aerobic capacity, the Wingate test focuses on peak power output and fatigue resistance during maximal exertion, essential for assessing power-based performance.

247. (D) A general, enduring trait, while motor skill is a specific, learned action.
The fundamental difference between motor ability and motor skill lies in their nature and how they are acquired. Motor ability refers to a general and largely innate trait that provides the foundation for an individual's physical performance, such as reaction time or coordination. In contrast, a motor skill is a specific, learned action that is developed and refined through practice and instruction. While individuals are born with varying levels of ability, they can acquire and improve skills.

248. (A) Provide objective data for evaluation and program improvement.
The significant value of testing and measurement in physical education lies in their ability to provide objective data for evaluation and program improvement. Without these processes, assessment would be based solely on subjective observation, which is more prone to bias. Numerical scores from tests allow educators to track progress, identify strengths and weaknesses, and determine if educational objectives are being met. This information is essential for making informed decisions about instruction and for ensuring overall effectiveness.

249. (C) Aggression level
Basic assessments in physical education and sports typically focus on physiological and physical parameters that are easy to monitor and directly related to health and fitness. These include heart rate, blood pressure, and breathing frequency. These measures provide immediate information about an individual's biological status. In contrast, aggression level is a complex psychological variable that is not typically part of a basic physical assessment. Measuring aggression requires specialized psychological inventories and is usually reserved for research.

250. (A) Facilitate the optimal development of each individual.
The ultimate goal of the evaluation process in physical education is to facilitate the optimal development of each individual student or athlete. By systematically gathering and interpreting data, educators can identify the unique needs of every participant and provide the support necessary for them to reach their full potential. Evaluation is used to improve learning, motivate students, and ensure the program remains effective and inclusive. This student-centered approach ensures that the primary focus remains healthy development.

251. (B) A test is a tool for measurement, and evaluation is the interpretation of that measurement.
A test serves as the specific instrument or procedure designed to collect information. Measurement involves the administration of this test to gather quantitative data, such as a numerical score. Evaluation represents the final phase where this data is interpreted and judged

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measure of maximal muscular strength rather than coordination. It focuses on the peak force a person can exert in a single effort against resistance. Therefore, it is categorized differently in a fitness testing battery.

222. (D) Strength
A dynamometer is a specialized scientific instrument used to measure the force or power exerted by a muscle or group of muscles, providing an objective score of muscular strength. Common types include handgrip dynamometers for upper body strength and back-and-leg dynamometers for lower body assessment. These devices record the peak force produced during a maximal effort, typically in a static position. Measuring strength with a dynamometer is a reliable and standardized method for assessing physical fitness and monitoring training.

223. (A) Tennis
The Broer-Miller Test is a recognized standardized skill test designed to assess technical proficiency in tennis. It specifically measures a player's ability to perform forehand and backhand drives with both power and accuracy. Participants are required to hit the ball into designated target areas on the court to earn points. This test provides a quantitative evaluation of technical skills under controlled conditions. Coaches use the results to identify specific strengths and weaknesses and to monitor technical tennis development.

224. (B) Genu valgum
Genu valgum is a postural deviation of the lower limbs characterized by an abnormal inward curvature of the knees, commonly known as knock-knees. In this condition, when the individual stands with their knees touching, their ankles remain significantly far apart. This deviation can affect balance and movement efficiency and lead to increased stress on joints. Regular postural screenings are important for identifying genu valgum early, allowing for corrective exercises to improve overall skeletal alignment and functional physical movement.

225. (B) Program improvement
When a teacher modifies their instruction or curriculum based on the results of student assessments, such as poor mid-term scores, they are using evaluation for the purpose of program improvement. This process involves identifying areas where learning has not met the intended objectives and making necessary adjustments to enhance the effectiveness of the teaching. The ultimate goal is to improve student achievement and ensure the program remains responsive to needs. This application is essential for maintaining education.

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226. (A) Body Composition
Body composition is a primary component of health-related physical fitness, as it refers to the relative percentages of fat, muscle, and bone in the body. Maintaining a healthy body composition is directly linked to overall wellness and the prevention of metabolic and cardiovascular diseases. In contrast, components like agility, balance, and reaction time are performance-related. While they are important for sports, they are not essential for maintaining basic health. Therefore, body composition is prioritized in health focused assessments.

227. (C) Field Hockey
The Schmithals-French Test is a standardized skill battery used to assess technical proficiency in field hockey. It includes items designed to measure fundamental skills such as dribbling, fielding, and hitting. These tasks provide an objective score of a player's competence in the sport's key technical areas. Using validated tests like the Schmithals-French ensures that evaluations are reliable across different individuals and groups. Coaches use this information to identify technical deficiencies, monitor progress, and provide targeted feedback to improve performance.

228. (D) Evaluation
Evaluation is a comprehensive and ongoing process that involves gathering data and making value judgments about an individual's progress or achievement. It is not a single instrument or tool. In contrast, a test, questionnaire, and stopwatch are all specific tools used during the measurement phase of evaluation to collect relevant information. Evaluation is the broader framework that gives meaning to the data collected by these tools. Understanding this distinction is essential for effectively monitoring student growth and program success.

261. (D) Knowledge test
Knowledge tests are specifically designed to evaluate the cognitive domain, which includes an individual's understanding of various concepts. Assessing a student's grasp of biomechanical principles falls under this category as it tests theoretical understanding rather than physical performance. These tests focus on rules, strategies, and the scientific underpinnings of physical activity and various sports.

262. (B) To evaluate the effectiveness of individual test questions.
Item analysis is a critical stage in the rigorous construction of a standard knowledge test. It involves a detailed evaluation of each individual question to determine its difficulty level and its ability to discriminate between high and low performers. This ensures that only effective and well-constructed items are included in the final version of the assessment.

263. (C) Skill tests measure the psychomotor domain, while knowledge tests measure the cognitive domain.
The primary distinction between these two assessments lies in the domains they measure. Skill tests focus on the psychomotor domain, evaluating an individual's proficiency in performing physical tasks. Conversely, knowledge tests target the cognitive domain, assessing mental understanding of rules and strategies. Both are essential for a comprehensive evaluation of a student's athletic and mental abilities.

264. (D) Planning the test with a table of specifications.
Constructing a standard knowledge test begins with a meticulous planning phase. This initial step involves creating a table of specifications to ensure the test covers all intended content areas and cognitive levels. Planning provides a blueprint for the subsequent stages, such as writing items and conducting preliminary administrations to refine the final assessment tool used for evaluation.

265. (A) A skill test measuring proficiency.
A test requiring students to perform a specific physical action, such as serving a volleyball into a designated zone, is a skill test. It evaluates an individual's proficiency in the psychomotor domain by assessing their ability to execute movement patterns accurately. Such tests are designed to reflect performance requirements found in actual game-like sporting situations and environments.

266. (B) Motor educability
Motor educability represents an individual's innate capacity to acquire new and complex movement patterns with speed and ease. Unlike motor ability, which refers to existing potential for various skills, motor educability specifically focuses on the learning process itself. Individuals with high motor educability are often considered highly coachable due to their rapid acquisition of new physical skills.

267. (B) Motor fitness is specific to athletic performance, while physical fitness relates to general well-being.
Physical fitness is a broad state of health that enables individuals to perform daily tasks with vigor and maintain overall well-being. Motor fitness is a more specialized concept focusing on components like speed and agility that are necessary for athletic success. While physical fitness targets health maintenance, motor fitness is primarily concerned with the specific quality of movement.

268. (A) Motor ability
Motor ability is defined as a general and enduring trait that serves as the foundation for performing a wide variety of motor skills. It represents an individual's underlying potential, which can be either innate or acquired through experience. High motor ability makes it easier for a person to learn and excel in diverse sports and complex physical activities.

269. (C) Motor educability.
When an athlete demonstrates the ability to master complex movements significantly faster than their peers, they are exhibiting high motor educability. This specific trait refers to the efficiency with which someone can learn new skills rather than the skills they already possess. It is a vital factor in determining how quickly an athlete can progress during training sessions.

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assessments like somatotyping or identifying unique physical predispositions for sports.

289. (D) Ensuring the accuracy and consistency of measurements.
Identifying anatomical landmarks involves locating specific bone structures or body points to serve as references during measurement. This practice is essential for ensuring that anthropometric data is gathered accurately and consistently across different sessions or by different testers. Standardized procedures minimize human error, making the resulting data reliable for monitoring growth or an individual's overall health status.

290. (A) weight to the cube of height.
The Ponderal Index is an anthropometric measure used to assess an individual's body build or relative leanness. It is calculated by relating weight to the cube of height, offering a different perspective on body proportions compared to the Body Mass Index. This index is particularly useful for evaluating the linearity and physique of individuals in sports science contexts.

291. (C) Mesomorphy
Mesomorphy is one of the three primary components of somatotyping, specifically representing the degree of musculoskeletal development. An individual with a high mesomorphy rating typically possesses a robust, muscular physique with a sturdy bone structure. This classification helps in understanding a person's physical predisposition and is often used to identify athletic talent in various sporting disciplines and activities.

292. (A) Ectomorphy
Ectomorphy is the somatotype component that describes an individual's relative linearity or slenderness. A person classified as an ectomorph generally has a lean build with long limbs and low levels of both fat and muscle mass. Identifying these traits is useful in physical education for tailoring training programs and understanding an individual's natural physical characteristics and limitations.

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293. (D) To identify deviations in body alignment and symmetry.
Postural evaluation is a systematic process used to assess the alignment and symmetry of the body. Its primary objective is to identify any deviations from an ideal posture, such as spinal curvatures or imbalances. Detecting these issues early is vital for preventing musculoskeletal pain and injuries, while also improving the biomechanical efficiency of an individual's daily movements.

294. (B) A lateral spinal curvature.
Scoliosis is a specific type of postural deviation characterized by a lateral, or sideways, curvature of the spine. Unlike forward or backward curves, scoliosis involves an abnormal side-to-side bend that can affect balance and movement. Identifying this condition through postural screening allows for early intervention and corrective strategies to improve spinal health and various aspects of functional performance.

295. (C) talent identification and injury prevention.
Somatotyping and postural evaluation provide valuable insights into an individual's physical structure and health. Somatotyping assists in talent identification by categorizing body builds suited for specific sports. Postural evaluation helps in injury prevention by identifying alignment issues that could lead to strain. Together, these assessments support the development of effective, safe, and personalized physical education programs and goals.

296. (D) Vital capacity
Vital capacity is a measure of the maximum volume of air that can be expelled from the lungs following a maximal inhalation. This physiological indicator provides important information about respiratory function and lung efficiency. It is typically measured using a spirometer and is a useful data point for assessing the overall aerobic potential and health of an individual athlete.

297. (A) Standardized questionnaires and inventories.
To assess psychological constructs such as anxiety, motivation, or team cohesion, practitioners use standardized questionnaires and inventories. These tools provide a structured way to gather subjective data regarding an individual's mental state and traits. By analyzing the responses,

contractions without fatigue. Cardiovascular endurance evaluates the efficiency of the heart and lungs in supplying oxygen during sustained activities. Both types are important for different aspects of physical performance and overall fitness for athletes.

280. (D) Coordinative abilities
Coordinative abilities involve the complex interaction between the nervous system and muscles to produce efficient movement. Agility runs, which require rapid changes in direction and speed, serve as a primary method for testing these abilities. These tests are vital for sports demanding quick adaptation and intricate movement patterns that go beyond basic speed or muscular strength.

281. (A) Volleyball
The Russell-Lange Test is a specialized sports skill assessment designed for volleyball players. It specifically measures the accuracy and consistency of volleying or setting, which are fundamental techniques in the sport. By providing objective data on these skills, coaches can better evaluate a player's technical proficiency and determine their suitability for various specific court positions and roles.

282. (B) Sports skill tests are highly specific to the demands of a single sport.
Sports skill tests are characterized by their high degree of specificity to a particular sport. While general motor fitness tests measure broader attributes like speed or strength, sports skill tests evaluate the precise technical actions required for a game. They often utilize equipment and scenarios that closely mimic the actual conditions of competitive play and performance.

283. (B) Specific sports skill test for basketball.
A test requiring an athlete to dribble a ball around cones is a specific sports skill test for basketball. This assessment isolates a key technical skill—dribbling speed and control—under controlled conditions. Such tests are used to provide objective evaluations of a player's ball-handling proficiency, which is essential for performance and tactical execution during a competitive game.

284. (A) Skill proficiency and control in a specific sport.
Both the French-Stalter short service test and the Dyer Tennis Test are designed to evaluate technical proficiency and control. The former assesses accuracy in badminton serving, while the latter measures consistency in tennis rallying. These tests provide coaches with objective data to identify strengths and weaknesses in a player's specific sports skills and overall technical development over time.

285. (C) Kicking a ball against a wall.
The McDonald Soccer Test is a common assessment tool used in football to evaluate kicking proficiency and ball control. It primarily involves kicking a soccer ball against a wall repeatedly within a specified time limit. This test provides a reliable and objective measure of a player's ability to handle the ball and execute accurate, controlled kicks during athletic performance.

286. (D) Weight and height.
The Body Mass Index is a widely used health screening tool derived from two primary anthropometric measurements: weight and height. By relating an individual's mass to their stature, the index provides a simple numerical value used to categorize body weight status. It serves as an initial assessment for identifying potential health risks associated with an individual's weight.

287. (C) To estimate body fat percentage.
Skinfold measurements are taken at specific sites on the body to measure the thickness of subcutaneous fat. This data is then used in various formulas to estimate an individual's total body fat percentage. Understanding body composition in this way is more informative than weight alone, as it distinguishes between fat mass and lean muscle tissue for health.

288. (B) Diameters
Biacromial and bi-iliac measurements represent the widths of the shoulders and hips, respectively. These are classified as diameters in anthropometry and are used to describe the dimensions of the skeletal frame. Such data is useful for understanding an individual's body proportions and can be integrated into broader

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strength. However, pairing the 50-yard dash with cardiovascular endurance is incorrect. The 50-yard dash is a short sprint that primarily measures maximal running speed and anaerobic power rather than heart and lung capacity for sustained activity.

237. (C) Perceived exertion
The Borg Scale is a psychological and physiological tool used to measure an individual's rate of perceived exertion (RPE) during physical activity. It typically uses a scale from 6 to 20, allowing participants to subjectively rate how hard they feel they are working based on physical sensations like heart rate, breathing, and muscle fatigue. This measure provides valuable feedback on exercise intensity and can be used to monitor training loads. It is a widely used method in sports science.

238. (D) To measure the accuracy of the short serve.
The French-Stalter Badminton Test is a standardized instrument specifically designed to measure the accuracy of a player's short serve. The short serve is a critical tactical skill, particularly in doubles play, where precise placement is needed to prevent an opponent's attack. This test utilizes specific target areas on the court to provide a quantitative evaluation of technical proficiency. By assessing performance in this task, coaches can provide objective feedback and identify technical adjustments necessary to improve consistency.

239. (A) The scoring of the test is free from bias or subjective judgment.
Objectivity in testing refers to the degree to which the scoring process is free from the personal bias or subjective judgment of the evaluator. A highly objective test has clearly defined criteria and standardized procedures, ensuring that different testers obtain similar results when scoring the same performance. This is essential for maintaining fairness and reliability in assessment. Standardized tests are designed with high objectivity to allow for consistent and accurate comparisons between individuals and groups in programs.

240. (B) Hydrostatic (underwater) weighing
Hydrostatic or underwater weighing is an assessment method used to determine body volume, which is then used to calculate body density and estimate body fat percentage. It is based on Archimedes' principle, which states that the volume of an object is equal to the amount of water it displaces. Because lean tissue is denser than fat tissue, an individual's weight in water relative to their dry weight reveals their body composition. This method is often considered a gold standard.

241. (B) Criterion-referenced
In a criterion-referenced test, an individual's performance is interpreted by comparing their score against a pre-determined standard or set of criteria. The focus is on determining whether the participant has mastered a specific skill or reached a minimum level of proficiency rather than comparing them to others in a group. This approach is essential for ensuring that all individuals meet the necessary standards for safety or competence. It is commonly used for grading and certifying skills in programs.

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242. (A) Arteries
Pulse rate is the measurement of the mechanical pressure wave felt in the arteries during each contraction of the heart. As the heart pumps blood into the arterial system, the walls of the arteries expand and contract, which can be palpated at specific sites like the wrist or neck. This wave is not present in veins, capillaries, or lungs in the same way. Monitoring pulse rate provides immediate information about heart rate and is a fundamental measure for assessment.

243. (C) Motor educability
The Iowa-Brace test is a standardized instrument designed to measure motor educability, which is an individual's innate ability to learn and acquire new motor skills with ease. It consists of a battery of several stunts or movements that assess the potential for skill acquisition rather than the current level of physical fitness or sport-specific skill. This information is valuable for physical educators when introducing new activities, as it helps identify students who may quickly grasp patterns.

244. (D) A predominance of muscularity and bone development.
In Sheldon's somatotyping system, a mesomorphic physique is characterized by a predominance of

educators and coaches can better understand the psychological factors that influence an athlete's performance, behavior, and overall mental well-being.

298. (B) helps in developing mental skills training programs for athletes.
Evaluating psychological variables like mental toughness and achievement motivation is essential for a holistic approach to athletic development. This data allows for the creation of targeted mental skills training programs that help athletes manage stress and improve focus. Understanding the psychological profile of an individual or team also helps in fostering positive dynamics and improved team motivation.

299. (B) the relative amounts of fat and lean tissue.
Body composition is a physiological parameter that measures the relative proportions of fat mass and lean tissue, such as muscle and bone, in the human body. Unlike total body weight, it provides a clearer picture of an individual's health and physical status. This information is critical for designing appropriate nutrition and exercise plans to achieve specific fitness goals.

300. (A) Blood pressure and anxiety.
Blood pressure is a physiological indicator that reflects the force exerted by blood against the walls of the arteries. Anxiety is a psychological variable that can manifest as a situational state or a long-term trait. Identifying both types of variables is necessary for a comprehensive assessment of an individual, as they often interact to influence performance and health.

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CHAPTER 10

Sports Management and Administration

1. Which of the following best defines management in the context of physical education?
(A) The specific and limited act of coaching elite athletes for high-level performance.
(B) The process of planning, organizing, leading, and controlling resources to achieve organizational goals.
(C) The specialized focus on financial accounting and bookkeeping for sports programs.
(D) The physical maintenance and sanitization of sports facilities and athletic equipment.

2. A primary objective of personnel management in a sports organization is to:
(A) procure the best human resources and ensure their effective utilization.
(B) ensure maximum financial profit from seasonal ticket sales and merchandise.
(C) focus solely on the rigorous physical training of the administrative staff.
(D) manage the detailed inventory of all sports equipment and departmental supplies.

3. Match the aspects of financial management in List I with their primary descriptions in List II.
List I : (Aspects)
P. Objective
Q. Scope
R. Principle
S. Purpose
List II : (Descriptions)
1. Ensuring accountability and solvency.
2. Covers procurement of funds, allocation, and control.
3. The fundamental reason for undertaking financial activities.
4. To maximize the value of the organization through effective resource use.
(A) P-4, Q-2, R-1, S-3
(B) P-1, Q-3, R-2, S-4
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-4, R-3, S-1

4. All of the following are recognized principles of supervision EXCEPT:
(A) Supervision should be a cooperative enterprise.
(B) Supervision should be based on a planned program.
(C) Supervision must be creative and innovative.
(D) Supervision must be autocratic and directive.

5. Consider the following statements regarding facility management:
Statement I : Planning of sports facilities involves only the initial construction phase and does not concern long-term usage.
Statement II : Maintenance of outdoor facilities is often more complex than indoor facilities due to exposure to weather elements.
Which of the above statements is/are correct?
(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct, but Statement II is incorrect.
(D) Statement I is incorrect, but Statement II is correct.

6. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : A sports manager's interpersonal role is crucial for leading and motivating the team and staff.
Reason (R) : Interpersonal roles, such as being a figurehead and leader, involve interactions with people inside and outside the work unit.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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7. An event manager creates a detailed minute-by-minute schedule of activities, including travel times, warm-ups, and ceremony timings for a sports competition. This document is best identified as a(n):
(A) Budget report
(B) Post-event report
(C) Purchase order
(D) Itinerary

8. Which of the following statements about public relations in physical education is correct?
(A) Effective public relations aims to build mutual understanding and goodwill between an organization and its public.
(B) Public relations is solely concerned with paid advertising and commercial promotions for profit.
(C) The principles of public relations do not apply to non-profit or educational institutions.
(D) Public relations activities are primarily the responsibility of the technical coaching staff.

9. Arrange the following stages of event management in the correct chronological order:
I Execution
II Planning
III Rehearsal
IV Follow-up
V Reporting
(A) II, III, I, V, IV
(B) I, II, III, IV, V
(C) II, I, V, IV, III
(D) III, II, I, V, IV

10. Which of the following is an incorrect guiding principle for organizing a physical education program in an institution?
(A) The program should prioritize elite athletes over general student participation.
(B) The program should be based on the needs and interests of the students.
(C) The program should provide for a variety of activities.
(D) The program should be progressive and sequential in its curriculum.

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11. What is the most likely effect of poor time management skills on an administrator in a sports organization?
(A) Significantly increased organizational efficiency and overall staff productivity.
(B) Substantially reduced stress levels and improved long-term work-life balance.
(C) Enhanced ability to delegate complex tasks effectively to departmental subordinates.
(D) Missed deadlines, increased stress, and decreased overall effectiveness.

12. Consider the following items regarding the planning and preparation of a budget for a sports department:
(i) Estimating income from all possible sources.
(ii) Listing all anticipated expenditures.
(iii) Disregarding previous years' financial statements.
(iv) Justifying the requested amounts for each item.
Which of the above are essential components?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (i), (ii), and (iv)
(D) (ii), (iii), and (iv)

13. What is the most appropriate initial technique of supervision for a new physical education teacher?
(A) Immediately implementing a formal evaluation for terminal professional appraisal.
(B) Assigning them to lead the most complex school-wide or regional sports event.
(C) A series of classroom observations followed by a constructive feedback conference.
(D) Providing a list of rigid rules without any direct observation or active support.

14. A university plans to build a new multi-purpose indoor stadium. As the facility manager, what is your primary responsibility during the 'planning' phase?
(A) Overseeing the daily janitorial and cleaning schedule of the completed stadium.
(B) Marketing the stadium for external commercial events after construction is built.
(C) Auditing the final construction costs against the initial projected expenditures.

(A) Human skill
(B) Conceptual skill
(C) Technical skill
(D) Decisional skill

32. Which of the following is NOT a primary role of mass media in promoting physical education and sports?
(A) Providing information and raising awareness about events.
(B) Generating revenue exclusively for the media houses.
(C) Creating role models and heroes to inspire participation.
(D) Educating the public about the benefits of physical activity.

33. Match the management principle in List I with its correct description in List II.
List I : (Principle)
P. Authority and Responsibility
Q. Unity of Command
R. Esprit de Corps
S. Unity of Direction
List II : (Description)
1. Each group of activities with the same objective must have one head and one plan.
2. The right to give orders and the power to exact obedience are linked with accountability.
3. There should be a spirit of harmony and teamwork among employees.
4. An employee should receive orders from one superior only.
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-2, Q-4, R-3, S-1
(D) P-3, Q-1, R-4, S-2

34. A critical component of effective communication skills for a sports administrator is:
(A) active listening and providing clear, concise information.
(B) using technical jargon in all administrative conversations.
(C) speaking loudly to assert formal organizational authority.
(D) avoiding all forms of formal written communication.

35. The practice of preparing a budget based on the previous year's figures with incremental adjustments is known as:
(A) Zero-based budgeting
(B) Performance budgeting
(C) Incremental budgeting
(D) Capital budgeting

36. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : The principle of 'Unity of Command' is essential for effective personnel management.
Reason (R) : When an employee receives orders from multiple superiors, it can lead to confusion, conflict, and a breakdown in discipline.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

37. The 'procuring' aspect of facility management for a new gymnasium would involve:
(A) developing the daily schedule for gym usage.
(B) repairing a broken treadmill a year after opening.
(C) acquiring the land, construction services, and necessary equipment.
(D) managing the membership records of the gym users.

38. A sports manager acting as a 'Spokesperson' is performing which type of managerial role?
(A) Interpersonal
(B) Informational
(C) Decisional
(D) Conceptual

39. Arrange the following budget preparation steps in logical order:
I Submission and approval of the budget.
II Collection of data and estimation of needs.
III Execution and control of the budget.
IV Justification and consolidation of departmental requests.
(A) II, IV, I, III
(B) I, II, III, IV

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(D) Event rehearsal

23. Which of the following is NOT a 'Decision-making' role of a sports manager according to Mintzberg's classification?
(A) Entrepreneur
(B) Disturbance Handler
(C) Resource Allocator
(D) Monitor

24. Place the following steps of the purchasing process in the correct sequence for a large-scale equipment acquisition.
I Issuing a purchase order.
II Receiving and inspecting the goods.
III Identifying the need for equipment.
IV Inviting quotations or tenders.
V Evaluating bids and selecting a vendor.
(A) III, IV, V, I, II
(B) I, II, III, IV, V
(C) III, V, IV, I, II
(D) IV, V, I, II, III

25. A key principle of event management is to have contingency plans. This directly addresses the principle of:
(A) ensuring adequate and widespread public publicity.
(B) sticking rigidly to the initial tactical plan.
(C) being prepared for unexpected problems.
(D) minimizing the budget at all operational costs.

26. One of the core principles of management, 'Division of Work', suggests that:
(A) work should be specialized to increase efficiency.
(B) every employee should report to multiple supervisors.
(C) all tasks should be performed by a single individual.
(D) employees should be given complete autonomy without any guidance.

27. Consider the following statements regarding the objectives of personnel management:
(i) To attract and retain talented individuals.
(ii) To create a safe and healthy work environment.
(iii) To focus exclusively on punishing employee mistakes.
(iv) To help employees grow and develop to their full potential.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iii), and (iv)
(D) (i), (ii), and (iv)

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28. In financial management, what does 'auditing' primarily verify?
(A) The future and long-term financial projections of the organization.
(B) The accuracy and fairness of financial records and statements.
(C) The general popularity and public image of the sports teams.
(D) The internal morale and job satisfaction of administrative staff.

29. A supervisor who provides guidance, support, and constructive feedback to help a physical education teacher improve their instructional methods is demonstrating:
(A) An autocratic and directive approach.
(B) A laissez-faire and passive attitude.
(C) A creative and democratic principle of supervision.
(D) A punitive and fault-finding management technique.

30. Consider the following factors in the planning and management of sports infrastructure:
(i) Focusing only on facilities for a single, popular sport.
(ii) Ensuring compliance with safety standards and regulations.
(iii) Planning for multi-purpose use and future expansion.
(iv) Neglecting accessibility for differently-abled users.
(v) Considering long-term maintenance costs and sustainability.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iv)
(B) (ii), (iv), and (v)
(C) (ii), (iii), and (v)
(D) (i), (iii), and (v)

31. The ability of a sports manager to work with, understand, and motivate other people, both individually and in groups, is defined as:

(D) To rehearse the entire event schedule.

65. A news article about a local school's successful 'Health and Fitness Week' is an example of:
(A) Paid advertising
(B) Publicity
(C) Internal communication
(D) Financial auditing

66. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : The management of records is a critical but often overlooked aspect of facility management.
Reason (R) : Accurate records of maintenance, warranties, and usage patterns are essential for efficient operation, future planning, and legal compliance.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

67. Which of the following is NOT a principle of personnel management?
(A) Principle of fair remuneration.
(B) Principle of team spirit.
(C) Principle of maximum individualism.
(D) Principle of scientific selection.

68. The "mechanics of purchase" in financial management involves all of the following steps EXCEPT:
(A) Inviting tenders.
(B) Placing a supply order.
(C) Making payment for goods received.
(D) Conducting a self-appraisal of communication skills.

69. Arrange the following supervisory techniques from least to most directive/formal.
I A formal evaluative report.
II An informal chat about a class activity.
III A scheduled observation followed by a feedback conference.
IV A departmental workshop on a new teaching strategy.
(A) II, IV, III, I
(B) I, II, III, IV
(C) IV, III, II, I
(D) II, III, I, IV

70. The primary difference between maintenance of indoor and outdoor facilities lies in the:
(A) complete absence of any requirement for indoor maintenance work.
(B) impact of weather and environmental factors on outdoor facilities.
(C) fact that only large outdoor facilities require detailed planning.
(D) use of formal records, which only applies to indoor facilities.

71. A manager's ability to use the procedures, techniques, and knowledge of a specialized field is known as:
(A) Human Skill
(B) Conceptual Skill
(C) Interpersonal Skill
(D) Technical Skill

72. Consider the following statements regarding the planning phase of event management:
(i) Setting clear and measurable objectives.
(ii) Developing a detailed budget.
(iii) Ignoring the need for volunteers.
(iv) Creating a timeline for all major tasks.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (i), (ii), and (iv)
(D) (ii), (iii), and (iv)

73. The guiding principle of public relations that emphasizes creating a positive image and fostering goodwill is the principle of:
(A) Financial gain
(B) Autocratic control
(C) Mutual interest
(D) Deception

74. One of the classical principles of management, "Scalar Chain," refers to:
(A) the line of authority from top management to the lowest ranks.
(B) every employee having only one boss.
(C) teamwork and harmony within the organization.
(D) specialization of work.

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(C) IV, II, I, III
(D) II, I, IV, III

40. What is the primary purpose of a 'checklist' in event management?
(A) To ensure all necessary tasks and items are accounted for and completed.
(B) To serve as the main advertising tool for the event.
(C) To list the names of all participants and spectators.
(D) To act as a financial statement after the event is over.

41. A Public Relation Officer (PRO) in a sports federation should ideally possess the qualification of:
(A) A professional coaching degree with specialization in a specific high-performance sport.
(B) Extensive technical expertise in financial auditing, accounting, and tax regulation.
(C) Strong writing skills, media relations experience, and a degree in communication.
(D) A formal background in civil engineering, architecture, and facility construction.

42. Consider the following statements about organizing sports programs in institutions:
(i) Safety of participants should be a paramount consideration.
(ii) Programs should be rigid and unchangeable, regardless of student feedback.
(iii) Facilities and equipment should be adequate and well-maintained.
(iv) The program must aim for the holistic development of students.
Which of the above statements are correct?
(A) (i), (ii), and (iii)
(B) (ii), (iii), and (iv)
(C) (i), (ii), and (iv)
(D) (i), (iii), and (iv)

43. An essential skill of administration that involves breaking down a large task into smaller, manageable parts and assigning them to appropriate personnel is:
(A) Micromanagement
(B) Self-appraisal
(C) Procrastination
(D) Delegation

44. Consider the following statements regarding financial management in sports:
Statement I : The primary purpose of financial management is to ensure the organization has sufficient funds to meet its obligations.
Statement II : Scope of financial management is limited to only bookkeeping and recording transactions.
Which of the above statements is/are correct?
(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct, but Statement II is incorrect.
(D) Statement I is incorrect, but Statement II is correct.

45. Consider the following techniques of supervision in an educational setting:
(i) Classroom observation.
(ii) Inter-visitation programs.
(iii) Sole reliance on student complaints.
(iv) Conducting workshops and seminars.
(v) Ignoring teacher performance entirely.
Which of the above are recognized techniques?
(A) (i), (ii), and (iv)
(B) (i), (iii), and (v)
(C) (ii), (iii), and (iv)
(D) (iii), (iv), and (v)

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46. The systematic process of repairing, servicing, and upkeeping sports facilities and equipment to ensure their optimal functionality and longevity is called:
(A) Procurement
(B) Auditing
(C) Budgeting
(D) Maintenance

47. Identifying a new market for a sports league or launching a new fitness program are examples of which decisional role of a sports manager?
(A) Entrepreneur
(B) Disturbance Handler
(C) Resource Allocator
(D) Negotiator

48. Match the event management stage in List I with its key activity in List II.
List I : (Stage)

P. Planning
Q. Rehearsal
R. Reporting
S. Follow-up

List II : (Activity)

1. Sending thank-you letters to sponsors and volunteers.
2. Creating a comprehensive document of the event's outcomes and finances.
3. Defining objectives, budget, and timeline.
4. Conducting a run-through of the opening ceremony.

(A) P-3, Q-4, R-2, S-1
(B) P-1, Q-2, R-3, S-4
(C) P-2, Q-3, R-1, S-4
(D) P-4, Q-1, R-2, S-3

49. What is the primary function of "publicity" as a tool of public relations?
(A) To build long-term relationships through two-way communication.
(B) To secure media coverage and disseminate information without direct payment.
(C) To purchase advertising space in newspapers and on television.
(D) To handle internal employee grievances and conflicts.

50. The scope of management in physical education and sports covers which of the following areas?
(A) A broad range including program development, personnel, facilities, finance, and events.
(B) Specialized training and development programs for elite athletes only.
(C) Specific financial transactions and accounting protocols for sports clubs.
(D) Marketing and promotional strategies for various sports-related merchandise.

51. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : Effective time management is a critical skill for any administrator in physical education.
Reason (R) : It enables the administrator to prioritize tasks, reduce stress, and achieve goals more efficiently, thereby improving overall program quality.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

52. The 'mechanics of purchase' refers to the:
(A) repair and maintenance of purchased equipment.
(B) overall financial health of the organization.
(C) process of selling old equipment.
(D) specific procedures and steps involved in acquiring goods and services.

53. A supervisor's duty includes all of the following EXCEPT:
(A) providing instructional leadership to teachers.
(B) evaluating the effectiveness of the physical education curriculum.
(C) personally coaching every sports team in the school.
(D) facilitating professional development opportunities for staff.

54. Arrange the typical lifecycle stages of a sports facility in the correct order.
I Maintenance and Operation
II Planning and Design
III Procurement and Construction
IV Disposal or Renovation
(A) I, II, III, IV
(B) II, III, I, IV
(C) III, II, I, IV
(D) II, I, IV, III

55. According to Robert Katz's model, as a manager moves to higher levels of administration, the relative importance of which skill increases the most?
(A) Technical Skill
(B) Human Skill
(C) Informational Skill
(D) Conceptual Skill

56. The document that outlines the step-by-step sequence of an event, including timings and responsibilities, is the:
(A) Itinerary
(B) Follow-up report
(C) Audit statement

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(D) Personnel file

57. Consider the following statements regarding the guiding principles for organizing a sports program in an institution:
(i) Activities must be safe for all participants.
(ii) The program should be limited to only competitive sports.
(iii) The program should cater to the diverse needs and interests of the students.
(iv) Evaluation of the program should be a continuous process.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iii), and (iv)
(D) (i), (ii), and (iv)

58. What is a primary objective of personnel management?
(A) To effectively recruit, develop, and motivate human resources.
(B) To maximize short-term financial profits at all costs.
(C) To minimize all employee salaries and benefit packages.
(D) To focus only on physical facility and equipment maintenance.

59. Which principle of financial management emphasizes that financial decisions should be made with a clear understanding of their impact on the organization's goals?
(A) Principle of Consistency
(B) Principle of Accountability
(C) Principle of Liquidity
(D) Principle of Goal-Orientation

60. Consider the following duties and responsibilities of a supervisor for physical education teachers:
(i) To assist teachers in developing effective teaching methods.
(ii) To take over and teach classes for underperforming teachers.
(iii) To help in the selection and effective use of supplies and equipment.
(iv) To evaluate the physical education program and suggest improvements.
(v) To handle all financial transactions of the school.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iv), and (v)
(D) (iii), (iv), and (v)

61. Planning for a sports facility should begin with:
(A) selecting the specific color of the interior walls.
(B) hiring the specialized construction and masonry crew.
(C) conducting a feasibility study and needs assessment.
(D) purchasing various pieces of high-end athletic equipment.

62. A sports manager reviewing game statistics and attendance figures to identify trends is primarily engaging in which informational role?
(A) Disseminator
(B) Spokesperson
(C) Figurehead
(D) Monitor

63. Match the administrative skill in List I with its example in a sports context in List II.
List I : (Skill)
P. Communication Skill
Q. Time Management
R. Self-Appraisal
S. Delegation
List II : (Example)
1. Assigning the task of equipment inventory to an assistant coach.
2. Reflecting on one's own performance in handling a recent crisis.
3. Using a planner to schedule meetings, practices, and administrative tasks.
4. Clearly explaining a new training drill to the team.
(A) P-1, Q-2, R-3, S-4
(B) P-4, Q-3, R-2, S-1
(C) P-3, Q-1, R-4, S-2
(D) P-2, Q-4, R-1, S-3

64. What is the main purpose of the 'follow-up' procedure in event management?
(A) To conduct the main part of the event.
(B) To complete post-event activities like sending thank you notes and settling accounts.
(C) To finalize the event plan before it begins.

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(D) Conducting a needs assessment to determine the required features and capacity.

15. Consider the following qualities of a sports manager:
(i) Strong leadership and decision-making ability.
(ii) In-depth knowledge of only one specific sport.
(iii) Excellent communication and interpersonal skills.
(iv) Aversion to financial planning and budgeting.
(v) High level of integrity and ethical conduct.
Which of the above are essential for effective performance?
(A) (i), (ii), and (iv)
(B) (i), (iii), and (v)
(C) (ii), (iii), and (iv)
(D) (i), (iv), and (v)

16. The managerial skill that involves the ability to see the organization as a whole and understand how different parts are interrelated is known as:
(A) Technical skill
(B) Conceptual skill
(C) Human skill
(D) Informational skill

17. Which principle of public relations suggests that all communication should be truthful and accurate to build credibility?
(A) The principle of clarity
(B) The principle of honesty
(C) The principle of timeliness
(D) The principle of brevity

18. Match the managerial role in List I as per Mintzberg's model with its corresponding activity in List II.
List I : (Role)
P. Figurehead
Q. Disseminator
R. Negotiator
S. Entrepreneur
List II : (Activity)
1. Initiating a new sports program to boost participation.
2. Attending a ceremonial event on behalf of the institution.
3. Forwarding relevant information from external sources to team members.
4. Discussing contract terms with a potential sponsor.
(A) P-1, Q-4, R-3, S-2
(B) P-2, Q-3, R-4, S-1
(C) P-3, Q-1, R-2, S-4
(D) P-4, Q-2, R-1, S-3

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19. "Self-appraisal" in personnel management refers to the process of:
(A) a supervisor unilaterally assessing an employee's performance.
(B) a peer providing feedback on a colleague's technical work.
(C) an employee evaluating their own performance against set standards.
(D) an external consultant reviewing the entire department's performance.

20. Which of the following is an example of a capital expenditure in a sports budget?
(A) Routine purchase of basic first-aid supplies.
(B) Monthly payment of electricity bills for the gymnasium.
(C) Regular salaries of the departmental coaching staff.
(D) Construction of a new swimming pool.

21. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : Regular and systematic supervision is important in physical education to ensure program quality and teacher development.
Reason (R) : Supervision primarily aims to find faults and penalize underperforming teachers.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

22. The process of systematically gathering, recording, and storing information for future reference, such as athlete records or equipment inventory, falls under:
(A) Financial auditing
(B) Management of records
(C) Public relations

75. Consider the following actions of an administrator:
(i) Prioritizing tasks effectively to meet deadlines.
(ii) Clearly communicating goals and expectations to staff.
(iii) Assigning tasks to staff members based on their strengths.
(iv) Avoiding any form of self-assessment or performance review.
(v) Responding to crises with a calm and problem-solving approach.
Which of the above demonstrate essential administrative skills?
(A) (i), (ii), (iv), and (v)
(B) (i), (ii), (iii), and (v)
(C) (ii), (iii), (iv), and (v)
(D) (i), (iii), (iv), and (v)

76. A budget that is prepared from scratch, without reference to the previous period's budget, is a:
(A) Incremental budget
(B) Zero-based budget
(C) Rolling budget
(D) Static budget

77. Consider the following statements about supervision:
Statement I : The primary importance of supervision is to improve the quality of instruction and student learning.
Statement II : Modern supervision techniques emphasize a democratic and cooperative approach over an authoritarian one.
Which of the above statements is/are correct?
(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct, but Statement II is incorrect.
(D) Statement I is incorrect, but Statement II is correct.

78. Match the type of facility in List I with its specific maintenance consideration in List II.
List I : (Facility)
P. Swimming Pool
Q. Wooden Gymnasium Floor
R. Natural Grass Football Field
S. Outdoor Tennis Court
List II : (Maintenance)
1. Regular mowing, aeration, and irrigation.
2. Resurfacing to fix cracks and maintain consistent bounce.
3. Monitoring and maintaining water chemistry (pH, chlorine).
4. Sanding, refinishing, and protection from moisture.
(A) P-1, Q-2, R-3, S-4
(B) P-2, Q-1, R-4, S-3
(C) P-3, Q-4, R-1, S-2
(D) P-4, Q-3, R-2, S-1

79. A sports manager resolving a conflict between two coaches is acting in which decisional role?
(A) Disturbance Handler
(B) Entrepreneur
(C) Resource Allocator
(D) Negotiator

80. A detailed run-through of the opening ceremony of a sports meet a day before the event is an example of:
(A) Execution
(B) Rehearsal
(C) Reporting
(D) Follow-up

81. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : A successful event manager must be adept at planning and organization.
Reason (R) : Event management involves a linear, single-step process that does not require coordination.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

82. Which of the following is NOT a guiding principle for organizing physical education programs?
(A) The program should be isolated from the general education curriculum.
(B) The program should be child-centered.
(C) The program should be scientifically based.
(D) The program should allow for progressive

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after a transaction.

Which of the above statement(s) is/are correct?

(A) (i), (ii), (iii), and (iv)
(B) (i), (ii), (iii), and (v)
(C) (i), (iii), (iv), and (v)
(D) (ii), (iii), (iv), and (v)

121. The ability of a coach to teach the specific skills of a sport (e.g., a proper tennis serve) is an example of which managerial skill?

(A) Human skill
(B) Conceptual skill
(C) Technical skill
(D) Decisional skill

122. The 'reporting' phase of event management involves:

(A) creating a final document that details the event's activities, attendance, financial outcomes, and challenges.
(B) rehearsing the sequence of events with volunteers.
(C) publicizing the event through media channels before it happens.
(D) planning the logistics of venue and equipment.

123. Match the Public Relations tool in List I with its primary characteristic in List II.

List I : (Tool)

P. Press Release
Q. Press Conference
R. Publicity
S. Lobbying

List II : (Characteristic)

1. Non-paid, commercially significant news or editorial coverage in the media.
2. A written statement distributed to the media to announce something newsworthy.
3. An organized event where a spokesperson makes a statement and answers questions from journalists.
4. Efforts to influence public policy through communication with government officials.

(A) P-1, Q-4, R-2, S-3
(B) P-3, Q-1, R-4, S-2
(C) P-4, Q-2, R-3, S-1
(D) P-2, Q-3, R-1, S-4

124. The principle of 'Unity of Direction' states that:

(A) every employee should receive orders from only one superior.
(B) all related activities should be under one manager with one plan.
(C) there must be a place for everything and everything in its place.
(D) employees should be encouraged to take initiative.

125. An administrator who regularly evaluates their own effectiveness in leading meetings, communicating with staff, and managing their time is practicing:

(A) Time management
(B) Delegation
(C) Self-appraisal
(D) Financial auditing

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126. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).

Assertion (A) : Preparing a detailed budget is a crucial first step in the financial management of a sports program.

Reason (R) : A budget serves as a financial plan, a tool for control, and a means of communicating the program's priorities and needs.

Which of the following is correct?

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

127. Which supervisory technique involves teachers observing their colleagues' classes to gain new insights and ideas?

(A) Inter-visitation
(B) Demonstration teaching
(C) Staff meetings
(D) Action research

128. What is the primary difference between planning and procuring in facility management?

(A) Procuring happens before planning.
(B) Planning is about deciding what to do, while procuring is about acquiring the resources to do it.
(C) Planning involves maintenance, while procuring involves scheduling.
(D) There is no difference; the terms are interchangeable.

(A) Self-appraisal
(B) Time management
(C) Financial auditing
(D) Public relations

93. Match the financial concept in List I with its definition in List II.
List I : (Concept)
P. Budget
Q. Auditing
R. Purchase Mechanics
S. Financial Planning
List II : (Definition)
1. The systematic procedure for acquiring goods.
2. A detailed plan of estimated income and expenditure for a specific period.
3. The process of determining how a business will afford to achieve its strategic goals.
4. An independent examination of financial information.
(A) P-1, Q-3, R-2, S-4
(B) P-2, Q-4, R-1, S-3
(C) P-3, Q-1, R-4, S-2
(D) P-4, Q-2, R-3, S-1

94. Which is NOT an objective of supervision in physical education?
(A) To improve teaching techniques.
(B) To ensure maximum development of students.
(C) To promote professional growth of teachers.
(D) To enforce a rigid and uncreative curriculum.

95. In the context of facility management, what does "procuring" mean?
(A) The process of acquiring or obtaining the facility and its equipment.
(B) The daily cleaning of the facility.
(C) The scheduling of events within the facility.
(D) The final report on the facility's profitability.

96. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : A sports manager must possess human skills to be effective.
Reason (R) : Human skills are exclusively needed for interacting with top-level executives and sponsors, not with subordinate staff or athletes.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

97. The 'execution' phase of event management primarily involves:
(A) creating the initial budget.
(B) conducting the event as planned.
(C) sending thank-you notes to sponsors.
(D) evaluating the success of the event.

98. Which of the following is an example of using mass media for publicity in sports?
(A) A television channel broadcasting a live football match.
(B) A coach giving a one-on-one feedback session to an athlete.
(C) An internal memo about policy changes.
(D) The minutes of a departmental meeting.

99. The theory of management that focuses on improving efficiency and productivity through scientific study of work methods is known as:
(A) Administrative Theory
(B) Bureaucratic Theory
(C) Scientific Management
(D) Human Relations Theory

100. Poor communication skills in an administrator can lead to:
(A) increased team morale and cohesion.
(B) efficient and timely completion of tasks.
(C) enhanced relationships with stakeholders.
(D) misunderstanding, errors, and decreased productivity.

101. A key principle of budgeting is 'Justification', which means:
(A) the budget should be flexible enough to allow for unexpected expenses.
(B) the budget must be balanced, with income equaling expenditure.
(C) every item of expenditure in the budget proposal must be explained and defended.
(D) the budget should be based on the previous year's figures.

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(A) One-to-one and personal.
(B) Slow and delayed.
(C) Secretive and confidential.
(D) One-to-many and impersonal.

159. The principle of 'Subordination of Individual Interest to General Interest' means:
(A) the goals of the organization should take precedence over the goals of any individual.
(B) individuals should be allowed to pursue their own interests without regard for the organization.
(C) managers should prioritize their own interests above all else.
(D) the general interest should be decided by a popular vote of all employees.

160. An effective self-appraisal requires an employee to be:
(A) overly critical and negative about their performance.
(B) objective and reflective in assessing their achievements and areas for improvement.
(C) dishonest to create a favorable impression.
(D) focused only on the performance of their colleagues.

161. An internal audit is performed by:
(A) an external agency hired for the purpose.
(B) employees of the organization itself.
(C) government tax authorities.
(D) the organization's sponsors.

162. Which of the following pairs is incorrectly matched regarding supervisory roles?
(A) Punisher - Focusing solely on penalties and reprimands
(B) Guide - Offering advice and direction
(C) Coordinator - Harmonizing efforts of the staff
(D) Evaluator - Assessing program and teacher effectiveness

163. A key aspect of planning a new sports facility is conducting a 'needs assessment' which aims to:
(A) select the contractor for building the facility.
(B) secure funding for the project.
(C) determine the types of facilities and programs the community wants and needs.
(D) design the marketing brochure for the new facility.

164. Which quality is least essential for a sports manager?
(A) Leadership
(B) Communication skills
(C) Integrity
(D) Expertise in an unrelated field like botany

165. A document that details a specific sequence of events or a plan of a journey is called a(n):
(A) Receipt
(B) Audit
(C) Itinerary
(D) Checklist

166. A public relations officer for a national sports team should have a qualification that includes:
(A) a deep knowledge of sports medicine.
(B) expertise in crisis communication and media relations.
(C) a certification in strength and conditioning.
(D) a background in nutritional science.

167. In physical education management, 'organizing' refers to:
(A) setting goals and objectives for the program.
(B) monitoring performance and making corrections.
(C) motivating and leading the staff.
(D) arranging resources, tasks, and people to carry out the plan.

168. The "grapevine" is an example of what type of communication in personnel management?
(A) Informal communication
(B) Formal upward communication
(C) Formal downward communication
(D) External communication

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169. What is the primary objective of financial management?
(A) To spend money as quickly as possible.
(B) To keep financial information secret.
(C) To maximize the value of the organization.
(D) To hire as many accountants as possible.

170. Which statement best describes the importance of supervision?
(A) It is a continuous process of guidance for improving the total teaching-learning process.
(B) It is important only for firing incompetent

Reason (R) : A democratic and collaborative approach fosters mutual respect, encourages teacher initiative, and leads to more meaningful and lasting improvements in instruction.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

112. The planning of sports infrastructure should prioritize:
(A) aesthetics over functionality and safety.
(B) long-term sustainability, user safety, and multi-purpose functionality.
(C) building the largest possible structure, regardless of need or budget.
(D) the preferences of a single, vocal community group.

113. When a sports manager allocates funds, personnel, and equipment to various teams and projects, they are primarily performing the role of:
(A) Figurehead
(B) Resource Allocator
(C) Leader
(D) Monitor

114. The 'itinerary' for a touring sports team would contain:
(A) a detailed schedule of travel, accommodation, practice, and match times.
(B) a list of all sponsors and their contributions.
(C) a report on the team's performance after the tour.
(D) the minutes of the pre-tour selection committee meeting.

115. A fundamental principle of public relations is that it is a:
(A) one-time campaign to promote a single event.
(B) method for coercing the media into providing positive coverage.
(C) planned and sustained effort to establish and maintain mutual understanding.
(D) process managed exclusively by the finance department.

116. A guiding principle for organizing a school sports day is to:
(A) focus solely on breaking previous records.
(B) limit events to only the most athletically gifted students.
(C) cancel the event if the weather is slightly imperfect.
(D) ensure opportunities for mass participation.

117. Consider the following statements regarding the objectives of personnel management in a sports organization:
(i) To procure the right kind of people in the right number at the right time.
(ii) To provide fair wages and good working conditions.
(iii) To ignore employee training and development to save costs.
(iv) To maintain good human relations and morale.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (ii), and (iv)
(C) (i), (iii), and (iv)
(D) (ii), (iii), and (iv)

118. The process of preparing a budget by justifying every expense for the upcoming period, starting from a "zero" base, is called:
(A) Incremental Budgeting
(B) Zero-Based Budgeting
(C) Top-Down Budgeting
(D) Auditing

119. Which of the following is an example of a supervisory technique?
(A) Developing a school-wide curriculum.
(B) Hiring a new physical education teacher.
(C) Purchasing new sports equipment.
(D) Conducting a demonstration lesson for teachers.

120. Consider the following aspects of managing records for a sports facility:
(i) Keeping accurate inventory of all equipment.
(ii) Maintaining records of all safety inspections and certifications.
(iii) Documenting all maintenance and repair work performed.
(iv) Storing warranty information for equipment.
(v) Discarding all financial records immediately

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development.

83. The process of an individual assessing their own strengths, weaknesses, and performance is known as:
(A) Peer appraisal
(B) 360-degree feedback
(C) Self-appraisal
(D) Top-down evaluation

84. What is the fundamental purpose of financial management in a sports organization?
(A) To create the most complex accounting system possible.
(B) To spend the entire budget by the end of the fiscal year, regardless of need.
(C) To focus solely on generating income through sponsorships.
(D) To ensure that financial resources are obtained and used effectively and efficiently.

85. Which of the following is a key responsibility of a supervisor in physical education?
(A) To discipline students for misbehavior in class.
(B) To handle all ticket sales for sporting events.
(C) To develop a positive and supportive professional climate.
(D) To write the school's overall academic policy.

86. Which aspect of facility management deals with keeping detailed information about equipment warranties, maintenance schedules, and facility usage?
(A) Procurement
(B) Management of records
(C) Planning
(D) Auditing

87. Consider the following qualifications for a modern sports manager:
(i) A deep understanding of business and management principles.
(ii) An inability to adapt to changing circumstances.
(iii) Strong leadership and communication skills.
(iv) Knowledge of the sports industry and its trends.
Which of the above statements are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iii), and (iv)
(D) (i), (ii), and (iv)

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88. The final stage of event management, which includes evaluating the event's success and documenting lessons learned, is:
(A) Reporting and Follow-up
(B) Planning and Reporting
(C) Execution and Rehearsal
(D) Checklist and Itinerary

89. A university's sports department issues a press release to announce the hiring of a new, high-profile coach. This is an activity related to:
(A) Financial management
(B) Personnel management
(C) Public relations
(D) Facility management

90. Consider the following statements regarding the principles of public relations in physical education:
(i) All public relations efforts must be honest and credible.
(ii) Communication should be a one-way flow from the organization to the public.
(iii) The program must be continuous and sustained, not just a one-time effort.
(iv) Research and evaluation are necessary to understand public opinion and measure effectiveness.
(v) Public relations should focus exclusively on covering up negative news.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iv)
(B) (ii), (iii), and (v)
(C) (i), (iii), and (iv)
(D) (i), (iv), and (v)

91. The principle of 'Esprit de Corps' in management emphasizes:
(A) strict adherence to rules and regulations.
(B) receiving orders from only one superior.
(C) fair and equitable treatment of employees.
(D) promoting team spirit and unity.

92. The Pomodoro Technique, Eisenhower Matrix, and time blocking are all methods associated with:

129. The three categories of managerial roles identified by Henry Mintzberg are:
(A) Technical, Human, and Conceptual
(B) Interpersonal, Informational, and Decisional
(C) Planning, Organizing, and Controlling
(D) Authoritarian, Democratic, and Laissez-faire

130. A manager must quickly find a major sponsor to replace one who unexpectedly withdrew funding just before a tournament. This task primarily falls under which decisional role?
(A) Disturbance handler
(B) Entrepreneur
(C) Resource allocator
(D) Figurehead

131. The main objective of a 'rehearsal' in event management is to:
(A) finalize the budget.
(B) send invitations to guests.
(C) identify and resolve potential issues before the actual event.
(D) prepare the final event report.

132. Consider the following actions related to post-event procedures:
(i) Sending thank you letters to sponsors, volunteers, and officials.
(ii) Settling all pending payments and closing the accounts.
(iii) Immediately planning the exact same event for the next week.
(iv) Compiling a final report with recommendations for future events.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iii), and (iv)
(D) (i), (ii), and (iv)

133. The concept of "management" is best described as:
(A) a static set of rules that never change.
(B) a process limited to large corporations.
(C) the art and science of getting work done through people.
(D) the act of performing all tasks individually.

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134. Which of the following is a key principle of personnel management?
(A) Principle of favoritism.
(B) Principle of fair remuneration and equity.
(C) Principle of discouraging employee development.
(D) Principle of centralized decision making in all matters.

135. Consider the following statements regarding financial management for a sports organization:
(i) All financial activities should align with the organization's primary objectives.
(ii) Funds should be used efficiently to maximize returns or value.
(iii) Financial records must be accurate and transparent.
(iv) The organization should maintain adequate liquidity to meet short-term obligations.
(v) Budgeting is an unnecessary formality that can be ignored.
Which of the above statement(s) is/are correct?
(A) (i), (ii), inventions, and (v)
(B) (i), (ii), (iii), and (iv)
(C) (ii), (iii), (iv), and (v)
(D) (i), (iii), (iv), and (v)

136. Consider the following statements:
Statement I : The sole purpose of supervision is to find faults with teachers' performance.
Statement II : A key responsibility of a supervisor is to facilitate the professional growth of the teaching staff.
Which of the above statements is/are correct?
(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct, but Statement II is incorrect.
(D) Statement I is incorrect, but Statement II is correct.

137. The 'management of records' for sports facilities includes maintaining:
(A) only the win-loss records of the home teams.
(B) newspaper clippings about past events held at the facility.
(C) blueprints, maintenance logs, inspection reports, and equipment warranties.
(D) personal contact information of all

spectators.

138. Match the category of managerial role in List I with a specific role within it in List II.
List I : (Category)
P. Interpersonal
Q. Informational
R. Decisional
S. Core Skill (Katz)
List II : (Specific Role/Skill)
1. Monitor
2. Human Skill
3. Negotiator
4. Leader
(A) P-4, Q-1, R-3, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-2, Q-3, R-4, S-1
(D) P-3, Q-4, R-1, S-2

139. Which of the following is a critical part of the 'execution' phase of a marathon event?
(A) Defining the route and budget a year in advance.
(B) Writing the post-race report.
(C) Sending thank you emails to sponsors after the race.
(D) Staff and volunteers carrying out their assigned duties on race day.

140. Creating and distributing a media kit containing fact sheets, photos, and spokesperson biographies is a task related to:
(A) Auditing
(B) Public Relations
(C) Personnel Appraisal
(D) Facility Procurement

141. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : The planning of sports infrastructure must account for potential future needs and expansion.
Reason (R) : A short-sighted approach to facility planning can lead to costly retrofitting, overcrowding, and an inability to accommodate new sports or growing demand.
Which of the following is correct?
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

142. Which of the following is NOT a theory of management?
(A) Scientific Management
(B) Administrative Management
(C) Human Relations
(D) Theory of Relativity

143. Effective communication skills for an administrator include all of the following EXCEPT:
(A) Avoiding all feedback
(B) Active listening
(C) Clarity and conciseness
(D) Non-verbal communication awareness

144. The 'scope' of financial management refers to:
(A) the specific period that a budget covers.
(B) the range of activities and decisions it encompasses, from fund-raising to allocation.
(C) the physical location where financial records are kept.
(D) the single objective of minimizing all costs.

145. A supervisor observing a physical education class to provide constructive feedback is using which technique?
(A) Workshop
(B) Classroom observation
(C) Staff meeting
(D) Action research

146. A facility manager is overseeing the replacement of the entire lighting system in a stadium with energy-efficient LEDs. This activity is best described as:
(A) maintenance and upgrading.
(B) initial planning.
(C) procurement.
(D) record disposal.

147. Consider the following roles of a manager:
(i) Monitor
(ii) Leader
(iii) Disseminator
(iv) Spokesperson
Which of the above are considered 'informational' roles?

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(A) (i), (ii), and (iii)
(B) (i), (iii), and (iv)
(C) (ii), (iii), and (iv)
(D) (i), (ii), and (iv)

148. A detailed checklist for an awards ceremony would likely include items such as:
(A) full financial audit of the entire sports department.
(B) construction blueprints of the auditorium.
(C) personal phone numbers of all attendees.
(D) Trophies, medals, list of winners, and a podium.

149. The primary goal of public relations in sports is to:
(A) sell as many tickets as possible.
(B) manage the team's travel and accommodation.
(C) build and maintain a positive image and relationship with the public.
(D) ensure all athletes follow a strict diet.

150. Consider the following statements regarding the principles for organizing effective physical education and sports programs:
(i) The program should be based on the interests and needs of the participants.
(ii) Safety should be a top priority.
(iii) The program should be progressive and well-structured.
(iv) The program should be evaluated regularly for effectiveness.
(v) The program should only focus on preparing students for professional sports careers.
Which of the above statement(s) is/are correct?
(A) (i), (ii), (iii), and (iv)
(B) (i), (ii), (iii), and (v)
(C) (i), (iii), (iv), and (v)
(D) (ii), (iii), (iv), and (v)

151. Which management theory emphasizes a formal hierarchical structure, clear division of labor, and a set of impersonal rules?
(A) Human Relations Theory
(B) Scientific Management
(C) Contingency Theory
(D) Bureaucratic Management

152. Which of the following is NOT an essential skill of administration?
(A) Inflexibility
(B) Decision-making
(C) Problem-solving
(D) Communication

153. A financial document that presents a snapshot of an organization's assets, liabilities, and equity at a specific point in time is the:
(A) Income Statement
(B) Budget
(C) Balance Sheet
(D) Audit Report

154. A supervisor who encourages teachers to experiment with new teaching methods and supports their innovative ideas is fulfilling the principle that supervision should be:
(A) Creative
(B) Autocratic
(C) Restrictive
(D) Unplanned

155. The management of a multi-purpose indoor sports hall involves managing bookings, ensuring equipment is available for various sports, and coordinating cleaning schedules. This is an example of managing a(n):
(A) Outdoor facility
(B) Virtual facility
(C) Financial record
(D) Indoor facility

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156. When a university president presents trophies at the annual sports awards ceremony, they are performing which managerial role?
(A) Monitor
(B) Figurehead
(C) Disseminator
(D) Entrepreneur

157. The 'reporting' step in event management is crucial for:
(A) creating initial excitement for the event.
(B) running the event on the day.
(C) ensuring accountability and providing a basis for future planning.
(D) paying the vendors before the event starts.

158. Mass media communication in the context of sports publicity is typically characterized as being:

102. Consider the following statements about the importance of supervision:
(i) It helps in maintaining and raising educational standards.
(ii) It fosters a sense of isolation among teachers.
(iii) It provides guidance and support, especially to new teachers.
(iv) It ensures that the educational objectives are being achieved.
Which of the above statement(s) is/are correct?
(A) (i), (ii), and (iii)
(B) (ii), (iii), and (iv)
(C) (i), (iii), and (iv)
(D) (i), (ii), and (iv)

103. The management of an outdoor athletics track requires regular attention to:
(A) water chlorination levels.
(B) the humidity and temperature controls.
(C) the polishing of the wooden floor.
(D) the condition of the track surface, drainage, and lane markings.

104. Which of the following is an example of a manager's informational role?
(A) Disseminating key information to subordinates.
(B) Acting as a figurehead at a ceremony.
(C) Negotiating a contract with a vendor.
(D) Handling an unexpected crisis.

105. Consider the following elements of a comprehensive plan for an event:
(i) A detailed checklist of all tasks.
(ii) An itinerary with a precise timeline.
(iii) Contingency plans for potential problems.
(iv) A plan for post-event reporting and follow-up.
(v) Disregard for budgetary constraints.
Which of the above statement(s) is/are correct?
(A) (i), (ii), (iii), and (v)
(B) (i), (ii), (iv), and (v)
(C) (ii), (iii), (iv), and (v)
(D) (i), (ii), (iii), and (iv)

106. A primary qualification for a Public Relation Officer in sports would be:
(A) excellent communication and media relation skills.
(B) proficiency in multiple sports.
(C) a degree in accounting.
(D) experience in facility maintenance.

107. The scope of management in physical education does NOT include:
(A) program planning and implementation.
(B) financial and budgetary control.
(C) personnel and staff development.
(D) prescribing medical treatments for injuries.

108. Match the managerial skill in List I with its characteristic in List II.
List I : (Skill)
P. Technical Skill
Q. Human Skill
R. Conceptual Skill
S. Decision-making Skill
List II : (Characteristic)
1. Ability to see the "big picture" and understand interrelationships.
2. Ability to choose the most appropriate course of action.
3. Proficiency in a specific type of work or activity.
4. Ability to work effectively with and through people.
(A) P-3, Q-4, R-1, S-2
(B) P-1, Q-2, R-3, S-4
(C) P-2, Q-3, R-4, S-1
(D) P-4, Q-1, R-2, S-3

109. An essential administrative skill involving the ability to prioritize tasks based on urgency and importance is central to:
(A) financial management.
(B) facility management.
(C) time management.
(D) public relations.

110. Which action is part of the 'auditing' process in financial management?
(A) Forecasting future revenues.
(B) Requesting funds for a new project.
(C) Preparing the initial departmental budget.
(D) Verifying financial records for accuracy and compliance.

111. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R).
Assertion (A) : Supervision in physical education should be a cooperative activity involving both the supervisor and the teacher.

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teachers.
(C) It is a one-time evaluation at the end of the year.
(D) It is unnecessary for experienced teachers.

171. The day-to-day upkeep of a sports facility, such as cleaning floors and checking equipment, is part of:
(A) Procurement
(B) Initial planning
(C) Budget auditing
(D) Routine maintenance

172. A sports manager's ability to analyze and diagnose complex situations is an example of their:
(A) Technical skills
(B) Conceptual skills
(C) Human skills
(D) Communication skills

173. The 'follow-up' phase of event management is critical for:
(A) selling tickets before the event begins.
(B) conducting the main performance.
(C) building long-term relationships and improving future events.
(D) setting the initial objectives.

174. Which of the following is NOT a principle of public relations?
(A) Honesty and Integrity
(B) Open communication
(C) Understanding the public's perspective
(D) Manipulation and Deception

175. The scope of management in physical education and sports is best described as:
(A) wide, encompassing all aspects from planning to evaluation of programs, personnel, and facilities.
(B) narrow and focused only on coaching.
(C) limited to the financial transactions of a sports team.
(D) centered exclusively on public relations and marketing.

176. Which of the following is an essential administrative skill?
(A) Procrastination
(B) Effective delegation
(C) Avoiding decisions
(D) Poor communication

177. A college physical education department requests funds for new gymnastics equipment. This request would be part of the:
(A) revenue budget.
(B) capital budget.
(C) operating budget.
(D) marketing budget.

178. A supervisor organizes a workshop on "Using Technology in Physical Education" for all the teachers in the department. This is an example of which supervisory technique?
(A) In-service training
(B) Classroom observation
(C) Inter-visitation
(D) Bulletin distribution

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179. Keeping a logbook of all repairs done on a swimming pool's filtration system is an example of:
(B) event management.
(C) management of records.
(D) public relations.

180. A sports manager who is knowledgeable about sports marketing, contract law, and financial analysis possesses strong:
(A) Conceptual skills
(B) Human skills
(C) Interpersonal skills
(D) Technical skills

181. A pre-event checklist is used by an event manager to:
(A) write the final report.
(B) calculate the final profit or loss.
(C) ensure no task is overlooked during planning and preparation.
(D) thank the volunteers after the event.

182. Which of the following is a primary function of communication and publicity through mass media in sports?
(A) To keep sports events secret from the public.
(B) To inform the public and generate interest and support.
(C) To criticize athletes and teams constantly.
(D) To focus only on the financial aspects of

five questions.

251. According to the passage, what is a primary purpose of adhering to guiding principles when organizing physical education programs in institutions?
(A) To guarantee professional athletic careers for all participants.
(B) To ensure programs are structured learning experiences contributing to holistic development.
(C) To focus exclusively on the financial profitability of sports events.
(D) To prioritize logistical convenience over participant development.

252. The passage suggests that the scope of management in physical education and sports is best described as:
(A) Extensive, covering strategic planning, event organization, and resource administration.
(B) Limited primarily to the coaching of athletes.
(C) Focused solely on the administration of sports facilities.
(D) Narrowed to the organization of competitive events.

253. Which of the following is NOT mentioned in the passage as a guiding principle for organizing sports programs?
(A) Establishment of clear objectives.
(B) Implementation of democratic processes.
(C) Adherence to rigid, unchangeable plans.
(D) Provision for comprehensive evaluation.

254. The passage illustrates the management process in organizing a university sports meet. Which management function is associated with ensuring the event stays within budget?
(A) Planning
(B) Organizing
(C) Leading
(D) Controlling

255. Based on the context provided, the application of management theories in physical education primarily aims to:
(A) Maximize the number of events held annually.
(B) Standardize all sports curricula across different institutions.
(C) Achieve predetermined goals by effectively using various resources.
(D) Reduce the administrative burden on teaching staff.

Direction : Please read the following source carefully.

Personnel management in the context of physical education and sports is a critical administrative function focused on the effective utilization of human resources to achieve institutional objectives. Its principles revolve around fairness, equity, and the promotion of professional growth. Key objectives include the recruitment and selection of qualified coaches, instructors, and administrative staff; their subsequent training and development; and the creation of a motivating work environment. Integral to this process are personal and administrative skills such as self-appraisal, communication, and time management. Self-appraisal is a mechanism for continuous professional development, allowing individuals to identify their strengths and weaknesses and plan for improvement. Effective communication skills are the bedrock of personnel management, essential for conveying expectations, providing constructive feedback, and resolving conflicts. Similarly, time management is an essential skill for administrators to juggle multiple responsibilities, from scheduling and staff coordination to long-term planning. These skills are not isolated abilities but are interconnected components of the essential skills of administration, enabling a sports manager to lead their team effectively and manage human capital strategically for organizational success.

Based on the above source, attempt the following five questions.

256. What is the main objective of personnel management in physical education and sports as described in the passage?
(A) To minimize the number of administrative staff in an institution.
(B) To effectively utilize human resources to meet organizational goals.
(C) To exclusively focus on the recruitment of top-tier athletes.
(D) To enforce a strict hierarchy and chain of command.

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194. The importance of supervision lies in its potential to:
(A) bridge the gap between educational theory and practice.
(B) increase teacher anxiety and reduce creativity.
(C) create a rigid and unchangeable school environment.
(D) focus solely on administrative paperwork.

195. Planning for an indoor swimming pool must include considerations for:
(A) irrigation and mowing.
(B) protection from rain and snow.
(C) ventilation, humidity control, and water quality management.
(D) resurfacing of asphalt.

196. A sports manager attending a conference to learn about new trends in sports marketing is fulfilling which aspect of the 'Monitor' role?
(A) Scanning the internal environment.
(B) Disseminating information to subordinates.
(C) Acting as a spokesperson to the media.
(D) Scanning the external environment.

197. Which of the following is NOT part of the reporting and follow-up procedure of an event?
(A) Financial reconciliation.
(B) Acknowledging sponsors and volunteers.
(C) Initial planning and budgeting.
(D) Performance evaluation of the event.

198. An ideal qualification for a Public Relations Officer would be a combination of a relevant academic degree and:
(A) a professional athlete's career.
(B) practical experience in media relations.
(C) a license in physiotherapy.
(D) a certificate in accounting.

199. Management is considered a process because:
(A) it is only applicable to manufacturing processes.
(B) it is a one-time activity.
(C) it is performed by only one person.
(D) it involves a series of interrelated functions.

200. Which of these is a primary objective of personnel management?
(A) To ensure that the organization's human resources are used in a way that effectively accomplishes its goals.
(B) To minimize the number of employees in the organization.
(C) To maximize the personal wealth of the personnel manager.
(D) To focus solely on the physical infrastructure of the organization.

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201. Which principle states that a budget should be comprehensive, covering all aspects of the organization's planned activities?
(A) Principle of Annuality
(B) Principle of Flexibility
(C) Principle of Totality
(D) Principle of Accuracy

202. Which statement is incorrect regarding the principles of supervision?
(A) Supervision should be a source of anxiety and fear for teachers.
(B) Supervision should be a planned and organized activity.
(C) Supervision should be democratic and cooperative.
(D) Supervision should be based on objective evidence and analysis.

203. A school is planning a new sports complex. The facility management team's first step in the 'planning' phase should be to:
(A) purchase the scoreboard.
(B) hire a cleaning crew.
(C) design the team locker rooms.
(D) determine the needs and goals of the school and community.

204. Which of the following is the best example of a manager's 'human skill' in action?
(A) Preparing a complex budget spreadsheet.
(B) Effectively resolving a conflict between two team members.
(C) Repairing a piece of faulty gym equipment.
(D) Designing a long-term strategic plan for the organization.

205. The 'execution' of an inter-college sports meet refers to:
(A) the process of designing the medals.
(B) the post-event financial accounting.
(C) the actual conducting of the scheduled

263. Which of the following is described in the passage as a key principle of financial management in sports?
(A) Prioritizing short-term gains over long-term sustainability.
(B) Maintaining flexibility by avoiding consistent accounting practices.
(C) Ensuring integrity in all financial transactions.
(D) Restricting financial information to senior management only.

264. The term 'mechanics of purchase' as used in the passage refers to the:
(A) Repair and maintenance of purchased sporting equipment.
(B) Financial negotiation skills of the purchasing officer.
(C) Final audit of all procurement documents.
(D) Systematic procedures for acquiring necessary goods and services.

265. Based on the passage, a primary objective of financial management in a physical education institution is to:
(A) Ensure financial solvency and the effective delivery of programs.
(B) Generate the highest possible profit from all activities.
(C) Invest heavily in high-risk, high-return financial markets.
(D) Reduce the budget for all non-competitive sports activities.

Direction : Please read the following source carefully.

Supervision in physical education and sports is a dynamic and professional service designed to improve the quality of instruction and the overall effectiveness of programs. Its objectives are multifaceted, aiming to foster the professional growth of teachers and coaches, enhance student learning and participation, and ensure the safe and efficient implementation of the curriculum. The importance of supervision lies in its role as a quality control mechanism and a support system for personnel. It is guided by principles that advocate for a cooperative, democratic, and scientific approach, moving away from the traditional model of inspection towards a more collaborative mentorship. Effective supervision employs a variety of techniques, such as systematic observation, clinical supervision cycles (pre-conference, observation, post-conference), workshops, and peer coaching. A supervisor's duties and responsibilities are consequently broad; they are not merely evaluators but also facilitators, mentors, and resource providers. They are responsible for providing constructive feedback, demonstrating effective teaching strategies, helping staff solve instructional problems, and facilitating access to necessary resources and professional development opportunities, thereby creating a culture of continuous improvement within the department.

Based on the above source, attempt the following five questions.

266. What is the fundamental shift in the approach to supervision as described in the passage?
(A) From a collaborative mentorship model to a traditional inspection model.
(B) From a traditional inspection model to a collaborative mentorship model.
(C) From a focus on student learning to a focus on teacher evaluation.
(D) From a democratic process to an autocratic one.

267. According to the passage, the primary importance of supervision in physical education is to serve as:
(A) A disciplinary tool for underperforming coaches.
(B) A quality control mechanism and a support system.
(C) A method for reducing administrative workload.
(D) An administrative process for curriculum design.

268. Which of the following is listed as a specific technique of supervision in the provided text?
(A) The clinical supervision cycle.
(B) Annual confidential reporting.
(C) Staff salary negotiation.
(D) Budget allocation review.

269. The duties and responsibilities of a supervisor, as outlined in the passage, characterize them most accurately as a(n):
(A) Evaluator focused solely on identifying

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217. A statement of estimated income and expenditure for a future period is known as a(n):
(A) Audit report
(B) Balance sheet
(C) Budget
(D) Purchase order

218. The ultimate aim of supervision in physical education is to:
(A) enhance student learning and development.
(B) find fault with teachers.
(C) complete administrative formalities.
(D) reduce the workload of the principal.

219. Proper 'management of records' for sports infrastructure is crucial for:
(A) aesthetic appeal only.
(B) ticket prices.
(C) more administrative work.
(D) planning future maintenance, ensuring safety compliance, and providing legal documentation.

220. Which skill becomes increasingly important at higher levels of management, allowing managers to think strategically about the organization?
(A) Technical skill
(B) Conceptual skill
(C) Manual skill
(D) Clerical skill

221. An event 'itinerary' is most similar in function to a:
(A) budget.
(B) final report.
(C) detailed schedule or timeline.
(D) marketing brochure.

222. When a sports organization uses social media to interact with fans, post updates, and share behind-the-scenes content, it is engaging in:
(A) Financial management
(B) Facility procurement
(C) Staff supervision
(D) Public relations

223. The management principle that advocates "a place for everything and everything in its place" is known as:
(A) Order
(B) Equity
(C) Initiative
(D) Esprit de corps

224. Effective time management for a sports administrator leads to:
(A) increased stress and missed deadlines.
(B) improved focus, reduced stress, and better work-life balance.
(C) reduced productivity and efficiency.
(D) neglecting important strategic tasks.

225. The process of verifying the accounts and financial records of a sports organization by an independent body is known as:
(A) Budgeting
(B) External auditing
(C) Financial planning
(D) Procurement

226. Which of the following is a modern, democratic technique of supervision?
(A) Collaborative action research
(B) Fault-finding inspections
(C) Issuing dictatorial commands
(D) Unannounced punitive checks

227. The planning for sports infrastructure must integrate the principles of:
(A) planned obsolescence.
(B) single-sport specialization.
(C) universal design for accessibility.
(D) minimizing initial cost at the expense of long-term safety.

228. A manager who inspires and encourages employees to achieve organizational goals is fulfilling the interpersonal role of a:
(A) Monitor
(B) Disseminator
(C) Resource allocator
(D) Leader

229. A 'follow-up' letter to a sponsor after a successful charity run is an important part of:
(A) event execution.
(B) the initial planning phase.
(C) building long-term relationships.
(D) the event rehearsal.

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sports.

183. The management principle 'Unity of Command' suggests that:
(A) an employee should report to multiple supervisors to get diverse opinions.
(B) all employees should work towards a single organizational goal.
(C) management should form a union to command workers.
(D) an employee should receive orders from only one superior.

184. To improve time management, an administrator creates a list of tasks and then categorizes them as urgent, important, not urgent, and not important. This is an application of the:
(A) Eisenhower Matrix
(B) Pareto Principle
(C) Peter Principle
(D) Parkinson's Law

185. A primary purpose of a budget is to serve as a tool for:
(A) historical record-keeping only.
(B) public relations.
(C) planning and control.
(D) personnel recruitment.

186. Which of the following is an incorrect statement about the duties of a supervisor?
(A) A supervisor should dictate all teaching methods without discussion.
(B) A supervisor should help teachers with their problems.
(C) A supervisor should promote a spirit of research and inquiry.
(D) A supervisor should help in the selection and organization of curriculum content.

187. The process of acquiring a new facility, from initial concept to final handover, is known as:
(A) Maintenance
(B) Auditing
(C) Supervision
(D) Procurement

188. In a crisis, such as a major injury during a game, a sports manager must take decisive action. This is an example of the 'Disturbance Handler' role, which falls under which category?
(A) Interpersonal
(B) Decisional
(C) Informational
(D) Conceptual

189. The execution of a sports event is the phase where:
(A) the budget is created.
(B) the final report is written.
(C) the plan is put into action.
(D) sponsors are first contacted.

190. Sending out a press release to announce a team's victory is an example of:
(A) financial auditing.
(B) facility maintenance.
(C) personnel management.
(D) public relations.

191. A guiding principle for organizing a sports program that ensures it caters to beginners, intermediate, and advanced participants is the principle of:
(A) Progression
(B) Exclusivity
(C) Stagnation
(D) Uniformity

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192. Which of the following is a correctly matched pair?
(A) Communication Skills - Ignoring emails and calls.
(B) Essential Administrative Skill - Effective problem-solving.
(C) Time Management - Procrastinating on important tasks.
(D) Self-Appraisal - Blaming others for personal shortcomings.

193. The primary difference between 'auditing' and 'budgeting' is that:
(A) auditing is a forward-looking plan, while budgeting is a backward-looking verification.
(B) budgeting is a forward-looking plan, while auditing is a backward-looking verification.
(C) both are identical processes.
(D) budgeting is done by externals, while auditing is done by internals.

243. Why is the management of records for a sports facility important?
(A) It is a task with no real value but is required by law.
(B) It helps in keeping the facility's existence a secret.
(C) It provides a historical account for legal, safety, and planning purposes.
(D) It is only useful for calculating the number of spectators.

244. A manager with strong 'conceptual skills' is able to:
(A) perform specific tasks like accounting or computer programming.
(B) interact effectively with and motivate people.
(C) follow instructions without question.
(D) understand the overall workings of the organization and its environment.

245. The final step in the event management process, which solidifies relationships and provides data for the future, is:
(A) Planning
(B) Rehearsal
(C) Follow-up
(D) Execution

246. Which statement best defines the role of communication in public relations?
(A) It is a one-way dissemination of propaganda.
(B) It is a two-way exchange to build mutual understanding and goodwill.
(C) It is used only during crises to control damage.
(D) It is restricted to communication with internal employees only.

247. The principle of 'Division of Labour' is important in management because it leads to:
(A) generalization and lower efficiency.
(B) confusion and conflict.
(C) employees having multiple bosses.
(D) specialization and increased efficiency.

248. A principle of personnel management is that selection should be 'scientific', meaning it should be based on:
(A) objective criteria and job requirements.
(B) personal bias and favoritism.
(C) the candidate's family connections.
(D) random chance.

249. A budget that rolls forward on a regular basis (e.g., monthly or quarterly) so that a 12-month projection is always available is a:
(A) Static budget
(B) Zero-based budget
(C) Rolling budget
(D) Capital budget

250. Which of the following is a primary responsibility of a supervisor?
(A) To improve the quality of instruction through guidance and support.
(B) To perform the duties of the school principal.
(C) To act as a security guard during school hours.
(D) To manage the school's cafeteria.

Direction : Please read the following source carefully.

The application of management principles and theories within the domain of physical education and sports is fundamental for the effective and efficient functioning of related programs and institutions. The scope of management in this field is extensive, encompassing the strategic planning of curricula, the organization of competitive and recreational events, the development of athletic talent, and the administration of sports facilities. Central to this is the adherence to guiding principles for organizing programs, which emphasize clear objectives, democratic processes, flexibility, and comprehensive evaluation. These principles ensure that sports programs in educational institutions are not merely activities but are structured learning experiences that contribute to the holistic development of participants. The management process involves a cycle of planning, organizing, leading, and controlling resources—human, financial, and physical—to achieve predetermined goals. For instance, organizing a university sports meet requires not just logistical planning but also the application of leadership theories to motivate staff and volunteers, and control mechanisms to ensure the event stays within budget and on schedule, reflecting the broad and integrated scope of management in this specialized context.

Based on the above source, attempt the following

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230. A good public relations officer must have the ability to:
(A) coach a variety of sports.
(B) write clearly, speak persuasively, and build relationships with the media.
(C) perform complex financial analysis.
(D) manage the maintenance of sports facilities.

231. The "P" in the management function "POSDCORB" stands for:
(A) Personnel
(B) Publicity
(C) Procurement
(D) Planning

232. An objective of personnel management is to:
(A) create and maintain a high level of employee morale.
(B) foster a climate of distrust.
(C) disregard employee welfare.
(D) encourage high employee turnover.

233. The principle that financial reports should be prepared using the same methods from one period to the next is the principle of:
(A) Materiality
(B) Prudence
(C) Consistency
(D) Objectivity

234. The responsibility of a supervisor includes:
(A) providing constructive feedback.
(B) ignoring teacher requests for resources.
(C) focusing only on star teachers.
(D) creating a competitive rather than cooperative environment.

235. The term 'procuring' in facility management refers to the process of:
(A) scheduling events in the facility.
(B) cleaning the facility.
(C) selling the facility.
(D) obtaining or acquiring the facility and equipment.

236. The managerial role of a 'liaison' involves:
(A) formally representing the organization to outsiders.
(B) maintaining a network of outside contacts who provide information and favors.
(C) passing information from outsiders to the organization's members.
(D) initiating new projects or ventures.

237. The correct sequence of some event management processes is:
(A) Execution → Planning → Follow-up
(B) Report → Execution → Planning
(C) Planning → Execution → Reporting
(D) Execution → Reporting → Planning

238. Mass media channels used for sports publicity include all of the following EXCEPT:
(A) Television and Radio
(B) Newspapers and Magazines
(C) The Internet and Social Media
(D) Internal departmental memos

239. 'Leading' in management involves:
(A) influencing and motivating employees to achieve organizational goals.
(B) setting performance standards and comparing against them.
(C) grouping tasks into departments.
(D) defining the organization's mission.

240. An essential skill for an administrator to have is the ability to analyze a problem, identify potential solutions, and choose the best course of action. This is known as:
(A) Indecisiveness
(B) Problem-solving and decision-making
(C) Procrastination
(D) Micromanagement

241. Which of the following is NOT a purpose of financial management in sports?
(A) To ensure adequate funds are available.
(B) To ensure all financial data is kept hidden from stakeholders.
(C) To ensure effective utilization of funds.
(D) To ensure safety and security of funds.

242. A key duty of a supervisor is to:
(A) help orient new teachers to the school system and curriculum.
(B) handle student disciplinary issues exclusively.
(C) manage the school's transportation services.
(D) act as the sole decision-maker for all school policies.

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257. According to the passage, self-appraisal serves as a mechanism for:
(A) Determining salary increments for staff.
(B) Comparing employees for annual performance awards.
(C) Documenting grievances against the management.
(D) Facilitating continuous professional development.

258. The passage emphasizes that effective communication skills are essential in personnel management primarily for:
(A) Conveying expectations, giving feedback, and resolving conflicts.
(B) Issuing unilateral directives and instructions.
(C) Publicizing the achievements of the sports department.
(D) Conducting market research on competitor institutions.

259. Which concept best describes the relationship between self-appraisal, communication, and time management as presented in the source?
(A) They are optional skills for senior administrators only.
(B) They are isolated abilities with no connection to each other.
(C) They are interconnected components of effective administration.
(D) They are separate from the essential skills of administration.

260. Based on the principles mentioned, which action would be most aligned with good personnel management in a sports department?
(A) Implementing a transparent process for staff training and promotion.
(B) Favouring certain coaches based on personal relationships.
(C) Making recruitment decisions without consulting the job requirements.
(D) Ignoring conflicts between staff members to avoid confrontation.

Direction : Please read the following source carefully.

Financial management within physical education and sports organizations is a specialized area concerned with the judicious planning, allocation, and control of monetary resources. Its primary objective is to ensure the organization's financial solvency and sustainability while maximizing the effectiveness of its programs. The purposes of financial management are multifaceted, including securing adequate funding, making optimal investment decisions regarding equipment and infrastructure, and ensuring accountability through transparent financial reporting. Key principles guiding this function include consistency in accounting practices, fiscal responsibility, and integrity in all financial transactions. A cornerstone of financial management is the planning and preparation of a budget, which serves as a financial blueprint for a specific period, translating the organization's goals into quantifiable financial terms. The process does not end with budgeting; the mechanics of purchase, which involve systematic procedures for acquiring goods and services, and auditing, the official examination of financial records, are critical for control and accountability. Auditing, in particular, verifies the accuracy of financial reports and ensures that expenditures align with the approved budget, thereby safeguarding the organization's assets and reputation.

Based on the above source, attempt the following five questions.

261. According to the passage, what is the primary role of a budget in sports financial management?
(A) To serve as a historical record of all past expenditures.
(B) To be a rigid document that cannot be altered under any circumstances.
(C) To secure maximum possible funding from external sponsors.
(D) To act as a financial blueprint that quantifies organizational goals.

262. The passage identifies auditing as a critical process primarily for:
(A) Allocating funds for new sports programs.
(B) Verifying the accuracy of financial records and ensuring compliance.
(C) Training staff in financial accounting procedures.
(D) Forecasting future revenue streams for the organization.

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games and ceremonies.
(D) the meeting where the initial idea was proposed.

206. Public relations can be defined as:
(A) the process of buying advertisements to promote a product.
(B) the internal process of appraising employee performance.
(C) the legal department of an organization.
(D) the management function that establishes and maintains mutually beneficial relationships between an organization and its publics.

207. The classical management principle of 'Equity' refers to:
(A) kindliness and justice in the behavior of managers towards subordinates.
(B) all employees receiving the exact same salary.
(C) the ownership stake in a company.
(D) subordinating personal interests to organizational interests.

208. An administrator who delegates a task to a subordinate but provides clear instructions, resources, and authority is demonstrating an essential skill of:
(A) micromanagement.
(B) effective delegation.
(C) self-appraisal.
(D) time wasting.

209. The 'mechanics of purchase' would typically begin with:
(A) payment to the vendor.
(B) requisition or identification of a need.
(C) receiving the goods.
(D) auditing the purchase.

210. A supervisor who says, "Do it my way or not at all," is using which style of supervision?
(A) Autocratic
(B) Democratic
(C) Laissez-faire
(D) Creative

211. The maintenance of an outdoor grass field differs from an artificial turf field in that the grass field requires:
(A) no maintenance at all.
(B) periodic infill replacement.
(C) regular mowing, watering, and aeration.
(D) protection from excessive sunlight.

212. A manager deciding on the budget for the upcoming season is performing the decisional role of:
(A) Entrepreneur
(B) Disturbance Handler
(C) Spokesperson
(D) Resource Allocator

213. What is the purpose of an event 'rehearsal'?
(A) To document what happened during the event.
(B) To thank sponsors and volunteers.
(C) To practice key moments of the event to ensure smooth execution.
(D) To finalize the event's budget.

214. Issuing a press kit, holding a press conference, and managing social media outreach are all activities related to:
(A) Facility management
(B) Public relations and communication
(C) Financial auditing
(D) Personnel self-appraisal

215. The 'scope of management' in sports encompasses:
(A) only on-field coaching strategies.
(B) only the sale of merchandise and tickets.
(C) only the legal compliance of the organization.
(D) a wide range of functions including planning, organizing, staffing, directing, and controlling.

216. A key part of personnel management involves creating systems for performance feedback, which includes self-appraisal, peer review, and supervisory evaluation. This serves the objective of:
(A) employee development and performance improvement.
(B) solely determining salary and bonuses.
(C) increasing paperwork for the HR department.
(D) finding reasons to terminate employees.

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faults.
(B) Administrator concerned only with logistical issues.
(C) Facilitator and mentor for professional growth.
(D) Financial auditor for the department.

270. Based on the passage, a key objective of supervision in physical education is to:
(A) Ensure strict adherence to a single teaching methodology.
(B) Rank teachers based on their performance for rewards.
(C) Increase the number of inter-school competitions.
(D) Foster the professional growth of teachers and coaches.

Direction : Please read the following source carefully.

Facility management in physical education and sports is a critical operational function that involves the comprehensive planning, procuring, and maintenance of all physical assets. This scope includes both indoor facilities, such as gymnasiums, swimming pools, and weight rooms, and outdoor facilities like playing fields, athletic tracks, and tennis courts. The process begins with strategic planning, which involves assessing the needs of the institution and community, determining facility specifications, and securing funding. The procurement phase follows, encompassing the construction or acquisition of the infrastructure. However, the most challenging aspect is the ongoing maintenance, which is essential for ensuring user safety, extending the lifespan of the facilities, and guaranteeing their readiness for use. Effective facility management also necessitates the diligent management of records. This includes maintaining detailed logs of maintenance schedules, safety inspections, equipment inventories, repair histories, and usage data. Such records are not merely administrative paperwork; they are vital tools for future planning, budget allocation for repairs and upgrades, risk management, and ensuring legal and regulatory compliance. The systematic management of sports infrastructure, therefore, directly impacts program quality, user safety, and the financial health of the organization.

Based on the above source, attempt the following five questions.

271. According to the passage, what is the primary purpose of managing records in facility management?
(A) To fulfill a minor administrative requirement with little practical use.
(B) To publicly display the maintenance history of the facility.
(C) To serve as vital tools for planning, risk management, and compliance.
(D) To track the personal performance of athletes using the facilities.

272. The passage suggests that the most challenging aspect of facility management is typically:
(A) The initial strategic planning and needs assessment.
(B) The ongoing maintenance to ensure safety and longevity.
(C) The procurement and construction of new facilities.
(D) The management of records for indoor facilities only.

273. Which of the following best describes the scope of facility management as detailed in the text?
(A) It is limited to the daily cleaning of indoor and outdoor facilities.
(B) It focuses only on the construction of new sports infrastructure.
(C) It is primarily concerned with the financial aspects of facility procurement.
(D) It involves the complete lifecycle from planning to maintenance of all physical assets.

274. The systematic management of sports infrastructure, as described, has a direct impact on all of the following EXCEPT:
(A) The specific coaching strategies used in a game.
(B) The quality of sports programs.
(C) The financial health of the organization.
(D) The safety of facility users.

275. A facility manager reviewing detailed logs of repair histories and safety inspections is engaging in which core aspect of their job?
(A) Initial procurement of facilities.
(B) Planning of new construction projects.

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ensuring that complex sports events proceed smoothly.

8. (A) Effective public relations aims to build mutual understanding and goodwill between an organization and its public.
Public relations in physical education functions as a strategic communication process designed to build mutual understanding and goodwill between a sports organization and the general public. It focuses on fostering positive relationships rather than merely pursuing commercial profit or advertising. By establishing transparency and trust, physical education departments can secure community support and enhance their institutional reputation, which is vital for the long-term success of sports programs.

9. (A) II, III, I, V, IV
Successful event management follows a logical chronological sequence starting with detailed planning to define objectives and resources. This is followed by rehearsals to identify potential issues and ensure coordination. The execution phase involves the actual conduct of the event, followed by reporting to document outcomes and financial details. Finally, the follow-up stage includes settling accounts and sending gratitude, ensuring all loose ends are professionally managed.

10. (A) The program should prioritize elite athletes over general student participation.
Educational sports programs should be designed to benefit the entire student population rather than focusing exclusively on elite athletes. Prioritizing mass participation ensures that all students have the opportunity to improve their physical health and social skills. Programs should remain child-centered, progressive, and sequential, catering to the diverse needs and interests of every participant. This inclusive approach aligns with the fundamental pedagogical goals of physical education institutions.

11. (D) Missed deadlines, increased stress, and decreased overall effectiveness.
Poor time management significantly hampers the performance of sports administrators, leading to missed deadlines and heightened stress levels. When tasks are not prioritized or scheduled effectively, the overall productivity of the sports department declines. Administrators may find themselves constantly reacting to crises instead of engaging in proactive planning. This inefficiency ultimately compromises the quality of sports programs and reduces the organization's ability to achieve its long-term objectives.

12. (C) (i), (ii), and (iv)
Developing a comprehensive budget for a sports department requires careful estimation of income and a detailed listing of all anticipated expenditures. Every requested amount must be justified to ensure fiscal responsibility and transparency. While previous financial statements serve as useful references for identifying trends, they should not be disregarded. These essential components allow administrators to create a realistic financial plan that supports the operational needs and strategic goals of the physical education program.

13. (C) A series of classroom observations followed by a constructive feedback conference.
For a new physical education teacher, the most appropriate initial supervisory technique involves direct classroom observation combined with a constructive feedback conference. This approach provides the supervisor with a clear understanding of the teacher's instructional methods and classroom management skills. The subsequent conference allows for professional dialogue, where strengths are recognized and areas for improvement are addressed in a supportive manner, fostering early career development and instructional excellence.

14. (D) Conducting a needs assessment to determine the required features and capacity.
During the initial planning phase of a sports facility, the facility manager must conduct a thorough needs assessment to define essential features and capacity requirements. This step ensures the project aligns with user demands and institutional goals before construction begins. By gathering data on intended usage and community needs, the manager can influence the design and budget effectively, preventing the construction of facilities that are either underutilized or inadequate for future sports activities.

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checklist, which itemizes every task, responsibility, and deadline, ensuring no detail is overlooked. An itinerary, or a schedule of activities, is also crafted to guide the flow of the event for participants, officials, and staff. A crucial, often underestimated, step is the rehearsal, which allows organizers to run through key procedures, test equipment, and identify potential problems in a controlled environment before the actual event. The execution phase is the live implementation of the plan, requiring adaptability and quick problem-solving. Following the event, the process is not yet complete. The reporting and follow-up procedures are vital for organizational learning. This involves compiling reports on various aspects of the event (e.g., financial, attendance, incidents), gathering feedback from stakeholders, and analyzing successes and failures. This follow-up informs future planning, making event management a cyclical process of continuous improvement.

Based on the above source, attempt the following five questions.

281. What is the primary function of a rehearsal in sports event management, according to the passage?
(A) To identify and mitigate potential problems in a controlled setting.
(B) To provide entertainment for the event staff before the main event.
(C) To finalize the list of participants and attendees.
(D) To serve as the primary marketing activity for the event.

282. The passage describes event management as a "cyclical process." What makes it cyclical?
(A) The repetition of the same event annually.
(B) The use of reporting and follow-up to inform future planning.
(C) The constant need to secure a new budget.
(D) The circular layout of most sporting arenas.

283. In the planning phase of event management, which tool is used to itemize tasks, responsibilities, and deadlines?
(A) An itinerary
(B) A checklist
(C) A financial report
(D) A follow-up procedure

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284. Based on the passage, the execution phase of an event primarily requires:
(A) Adaptability and effective problem-solving skills.
(B) Strict adherence to the plan with no deviations.
(C) A focus on reporting and documentation.
(D) The initial development of the event budget.

285. Which of the following is NOT part of the post-event procedures mentioned in the text?
(A) Compiling financial and attendance reports.
(B) Gathering feedback from stakeholders.
(C) Executing the live implementation of the plan.
(D) Analyzing successes and failures for future learning.

Direction : Please read the following source carefully.

Public relations (PR) in physical education and sports is the deliberate and sustained effort to establish and maintain mutual understanding and a positive image between an organization and its various publics. These publics include spectators, athletes, media, sponsors, and the community at large. The principles of effective public relations are founded on honesty, transparency, and consistent two-way communication, rather than one-way propaganda. It involves proactively managing communication to build goodwill and a strong reputation. Mass media, including television, radio, print, and digital platforms, serves as a primary channel for communication and publicity, allowing sports organizations to reach a broad audience. The goal is to disseminate positive stories, manage information during crises, and promote events and achievements. The role of the Public Relations Officer (PRO) is central to this function. The qualifications of a PRO in a sports context are specific; they must possess excellent written and verbal communication skills, a deep understanding of the sports industry, and strong relationships with media personnel. They need to be strategic thinkers, capable of creating and implementing PR campaigns that align with the organization's overall objectives, thereby shaping public perception and fostering supportive relationships.

Based on the above source, attempt the following five questions.

(C) Management of records for risk mitigation.
(D) Securing funding for facility expansion.

Direction : Please read the following source carefully.

The role of a modern sports manager is multifaceted and can be understood through three core categories of activity: interpersonal, informational, and decision-making. In their interpersonal role, managers act as figureheads, leaders, and liaisons, engaging with athletes, staff, stakeholders, and the public. The informational role requires the sports manager to be a monitor, disseminator, and spokesperson, constantly gathering data about the internal and external environment, distributing relevant information to their team, and representing the organization to outsiders. The most critical function is the decision-making role, where the manager acts as an entrepreneur, disturbance handler, resource allocator, and negotiator to guide the organization's strategic direction. To effectively perform these roles, a manager must possess a blend of managerial skills: technical, human, and conceptual. Technical skills refer to the knowledge and proficiency in the specific activities of the organization, such as understanding sport-specific rules or training methods. Human skills involve the ability to work with, understand, and motivate other people. Conceptual skills are the ability to see the organization as a whole, understand how different parts are interdependent, and anticipate how a change in one part will affect the others. The ideal qualification for a sports manager combines formal education in sports management with practical experience, fostering the development of all three skill sets.

Based on the above source, attempt the following five questions.

276. When a sports manager resolves a conflict between two coaches, which managerial role are they primarily enacting?
(A) Disturbance handler
(B) Spokesperson
(C) Figurehead
(D) Monitor

277. The ability of a manager to see the "big picture" and understand how all parts of the sports organization fit together is best described as which type of skill?
(A) Technical skill
(B) Human skill
(C) Informational skill
(D) Conceptual skill

278. According to the passage, the informational role of a sports manager includes which set of activities?
(A) Acting as a figurehead, leader, and liaison.
(B) Monitoring data, disseminating information, and acting as a spokesperson.
(C) Being an entrepreneur, negotiator, and resource allocator.
(D) Understanding sport-specific rules and training methods.

279. The passage suggests that proficiency in understanding sport-specific training methods is an example of a:
(A) Human skill
(B) Conceptual skill
(C) Technical skill
(D) Decisional skill

280. Which statement best synthesizes the relationship between managerial roles and skills as described in the text?
(A) Managerial roles are entirely dependent on technical skills.
(B) Human skills are only necessary for the interpersonal role of a manager.
(C) The decision-making role can be performed effectively with only conceptual skills.
(D) A manager needs a blend of technical, human, and conceptual skills to perform interpersonal, informational, and decision-making roles.

Direction : Please read the following source carefully.

Event management in the context of sports is a systematic and detailed process that requires meticulous planning and execution to achieve success. Its principles are rooted in clear objective setting, thorough organization, and proactive risk management. The process begins with a comprehensive planning phase, where the event's goals, budget, and scope are defined. A critical tool in this phase is the development of a detailed

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293. According to the text, a state-of-the-art stadium is of little value without:
(A) A large spectator capacity and expensive seating.
(B) A champion-level team to play in it.
(C) A dedicated marketing and public relations team.
(D) A structured event plan and skilled operating staff.

294. The passage suggests that a sports manager must possess a "conceptual view." This implies the manager should:
(A) Focus minutely on one single management task at a time.
(B) Understand how different management functions are coordinated and interconnected.
(C) Prioritize theoretical knowledge over practical administrative skills.
(D) Delegate all financial and facility-related tasks to subordinates.

295. Which of the following scenarios best represents a failure in the integration of management functions as described in the passage?
(A) A coach uses an innovative training technique.
(B) An event manager creates a detailed checklist for a competition.
(C) A well-funded sports team is provided with poorly maintained, unsafe equipment.
(D) A financial manager prepares a balanced budget for the upcoming year.

Direction : Please read the following source carefully.

The effectiveness of a sports administrator is determined by a confluence of managerial skills and personal competencies. While technical skills, such as knowledge of a sport or budgeting software, provide a necessary foundation, they are insufficient for high-level leadership. The essential skills of administration are better reflected in human and conceptual abilities. Human skills enable a manager to communicate effectively, motivate teams, and handle interpersonal dynamics, which are crucial for executing the interpersonal roles of a leader and liaison. Conceptual skills allow the administrator to think strategically, see the "big picture," and make complex decisions, aligning with the decisional roles of an entrepreneur and resource allocator. Complementing these skills are personal management competencies like self-appraisal, communication skills, and time management. Self-appraisal fosters a commitment to lifelong learning and adaptability. Advanced communication skills are the vehicle through which human skills are applied. Effective time management allows the administrator to balance the competing demands of the interpersonal, informational, and decisional roles without being overwhelmed. Therefore, the ideal sports manager is not just a technical expert, but a leader who combines conceptual foresight, human empathy, and disciplined personal management.

Based on the above source, attempt the following five questions.

296. According to the passage, what is the primary limitation of relying solely on technical skills in sports administration?
(A) They become obsolete very quickly.
(B) They are difficult to acquire without a coaching background.
(C) They are only useful for financial management tasks.
(D) They are insufficient for high-level leadership and strategic thinking.

297. The passage links human skills most directly to which managerial role?
(A) The interpersonal role of a leader and liaison.
(B) The informational role of a monitor.
(C) The decisional role of an entrepreneur.
(D) The technical role of a subject matter expert.

298. How does the passage characterize the relationship between human skills and communication skills?
(A) Communication skills are a less important subset of human skills.
(B) Communication skills are the primary vehicle for applying human skills.
(C) The two sets of skills are entirely separate and unrelated.
(D) Human skills are only required for written communication.

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299. The ability of a manager to balance the competing demands of various roles is attributed to which competency?
(A) Technical skill
(B) Effective time management
(C) Conceptual skill
(D) Self-appraisal

300. What is the main idea conveyed in the passage about an ideal sports manager?
(A) They are leaders who integrate conceptual, human, and personal management skills.
(B) They must be a former professional athlete with extensive technical knowledge.
(C) They are defined by their ability to secure funding and manage budgets.
(D) They primarily focus on strategic thinking and delegate all interpersonal tasks.

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ANSWERS

1. (B) The process of planning, organizing, leading, and controlling resources to achieve organizational goals.
Management represents a comprehensive process involving planning, organizing, leading, and controlling resources within an organization to achieve specific objectives efficiently. In physical education, this entails the coordination of human and material assets to ensure educational goals are met. This systematic approach ensures that organizational structures function optimally, and leaders can guide their teams toward excellence while maintaining professional standards across all administrative levels.

2. (A) procure the best human resources and ensure their effective utilization.
Personnel management focuses on the strategic acquisition and development of human resources to meet organizational needs. The primary goal involves recruiting the most qualified individuals and ensuring their talents are utilized effectively within the sports infrastructure. By prioritizing staff welfare, training, and appropriate placement, organizations can maintain high levels of productivity and professional satisfaction among coaches, administrators, and support staff in athletic departments.

3. (A) P-4, Q-2, R-1, S-3
Financial management involves diverse components where objectives focus on maximizing value through efficient resource utilization. The scope includes the procurement and allocation of funds, while principles ensure financial accountability and organizational solvency. Every activity serves a fundamental purpose linked to the reason for undertaking financial operations. Together, these elements create a framework for fiscal responsibility, allowing sports departments to manage budgets, expenditures, and income successfully.

4. (D) Supervision must be autocratic and directive.
Supervision in an educational setting should be a cooperative enterprise based on democratic values rather than autocratic or directive methods. Effective supervision relies on a planned, creative program that encourages innovation and professional growth among staff. By fostering a collaborative environment, supervisors can guide teachers and coaches toward achieving common goals. This approach prioritizes mutual respect and constructive feedback, ensuring the physical education curriculum is delivered effectively.

5. (D) Statement I is incorrect, but Statement II is correct.
Effective planning of sports facilities requires a long-term perspective that considers construction, usage, and sustainability rather than focusing solely on the initial build phase. Maintenance needs vary significantly between environments, with outdoor facilities requiring more complex care due to constant exposure to weather elements like rain, sun, and temperature shifts. Understanding these differences is crucial for administrators to ensure the safety, longevity, and functionality of all athletic spaces.

6. (A) Both A and R are true and R is the correct explanation of A.
A sports manager occupies various interpersonal roles that are essential for fostering teamwork and motivation among staff members. These roles include acting as a figurehead and a leader, which necessitate constant interaction with individuals both inside and outside the specific work unit. Because leadership involves guiding people toward shared objectives, the interpersonal nature of the role provides the foundational communication necessary for effective organizational management.

7. (D) Itinerary
An itinerary serves as a comprehensive document providing a minute-by-minute schedule of activities for sports competitions or travel. It ensures that all stakeholders, including athletes, coaches, and officials, are aware of specific timings for events like warm-ups, ceremonies, and transport. By detailing every phase of the schedule, this administrative tool helps maintain order and punctuality, reducing confusion and

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equipment inventories, and maintenance logs. Maintaining accurate and accessible records is crucial for administrative efficiency, legal compliance, and informed decision-making. This organized approach ensures that historical data is preserved, allowing managers to track progress, manage resources effectively, and meet institutional accountability requirements.

23. (D) Monitor
According to Mintzberg's classification, the monitor role is categorized as an informational role rather than a decisional one. A monitor focuses on scanning the environment to collect relevant information, whereas decisional roles like entrepreneur, disturbance handler, and resource allocator involve making choices and taking actions based on information. Understanding these distinctions helps sports managers balance their responsibilities between information processing and active decision-making, which are both essential for successful organizational leadership and program development.

24. (A) III, IV, V, I, II
The purchasing process for large-scale sports equipment must follow a structured sequence to ensure transparency and efficiency. It begins with identifying the specific need for equipment, followed by inviting quotations or tenders from potential suppliers. Once bids are received, they are evaluated to select the best vendor. The process continues with issuing a formal purchase order and concludes with receiving and inspecting the goods to ensure they meet the required specifications and quality standards.

25. (C) being prepared for unexpected problems.
Contingency planning is a fundamental principle of event management that involves preparing for unexpected problems or emergencies. By identifying potential risks in advance, event managers can develop alternative strategies to ensure the event proceeds smoothly despite unforeseen disruptions. This proactive approach minimizes the impact of crises, such as weather changes or equipment failure, and maintains the safety and satisfaction of participants. Flexibility and preparedness are key to managing complex sports events successfully and professionally.

26. (A) work should be specialized to increase efficiency.
The principle of 'Division of Work' suggests that tasks within an organization should be specialized among various employees to increase overall efficiency and productivity. By breaking down complex projects into smaller, manageable parts, individuals can focus on specific areas where they possess expertise. In physical education departments, this means assigning specialized roles to coaches, administrators, and maintenance staff. This focused approach reduces errors and speeds up task completion, ultimately benefiting the organization's operational performance.

27. (D) (i), (ii), and (iv)
Primary objectives of personnel management include attracting talented individuals, ensuring a safe work environment, and supporting employee development. By focusing on these areas, organizations can build a motivated and skilled workforce capable of achieving institutional goals. Effective personnel management avoids punitive measures and instead prioritizes positive reinforcement and growth opportunities. Creating a supportive atmosphere where employees can reach their full potential leads to higher retention rates and a more successful, cohesive sports department and overall program.

28. (B) The accuracy and fairness of financial records and statements.
Auditing in financial management serves as an independent verification process to ensure that financial records and statements are accurate and fair. It involves a systematic examination of transactions to detect errors or irregularities, providing transparency and accountability for the organization's funds. For sports departments, regular audits confirm that budgets are managed according to policy and that financial resources are used appropriately. This process maintains the trust of stakeholders and ensures the organization's long-term financial health.

29. (C) A creative and democratic principle of supervision.
A supervisor who offers guidance and constructive feedback to help a physical education teacher improve their instruction is applying creative and democratic principles. This approach emphasizes collaboration and mutual respect

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15. (B) (i), (iii), and (v)
Effective performance in sports management requires a combination of strong leadership, excellent communication skills, and high ethical standards. Leaders must make decisive choices while maintaining transparency and integrity to earn the trust of their staff and athletes. Interpersonal skills are vital for managing diverse teams and stakeholders. Furthermore, ethical conduct ensures that the organization operates fairly and remains respected within the broader sports community, supporting long-term institutional stability and growth.

16. (B) Conceptual skill
Conceptual skill represents the mental ability to view an organization as a holistic entity and understand how its various departments and functions interrelate. This skill is critical for high-level administrators who must make strategic decisions that impact the entire institution. By recognizing complex patterns and predicting the long-term consequences of actions, managers with strong conceptual skills can effectively coordinate resources and guide the organization toward its primary goals within a competitive sports environment.

17. (B) Principles of honesty
The principle of honesty in public relations dictates that all communication from an organization must be truthful and accurate. Providing factual information builds long-term credibility and trust with stakeholders, the media, and the general public. In the context of physical education, maintaining honest communication regarding program successes, challenges, and financial status ensures that the department retains its reputation for integrity. This ethical foundation is essential for fostering a positive institutional image.

18. (B) P-2, Q-3, R-4, S-1
Managerial roles in sports organizations involve various activities such as acting as a figurehead during ceremonies or as a disseminator by sharing information with team members. Negotiators handle contract terms with sponsors to secure funding, while entrepreneurs initiate new programs to improve organizational outcomes. These diverse roles ensure that the manager can represent the institution, manage internal communications, settle external agreements, and drive innovation to meet the changing needs of sports participation.

19. (C) an employee evaluating their own performance against set standards.
Self-appraisal is a reflective process in personnel management where an employee evaluates their own performance, strengths, and weaknesses against established organizational standards. This technique encourages personal accountability and professional development by allowing individuals to identify areas for growth. In a physical education setting, teachers and coaches who engage in self-appraisal can refine their instructional strategies and training methods, leading to improved performance outcomes and a greater sense of professional ownership.

20. (D) Construction of a new swimming pool.
Capital expenditures in a sports budget refer to significant investments in long-term assets that add value to the organization over several years. The construction of a new swimming pool is a prime example, as it involves large-scale spending on permanent infrastructure. Unlike operational expenses like utility bills or routine supplies, capital projects require extensive planning and separate funding. These assets enhance the program's capacity to serve athletes and the community for an extended period.

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21. (C) A is true but R is false.
Regular and systematic supervision is essential in physical education to ensure high program quality and support the professional development of teachers. However, the primary aim of supervision is not to find faults or penalize staff, but rather to provide guidance and improvement opportunities. By focusing on instructional leadership and collaborative feedback, supervisors help educators enhance their skills, which ultimately leads to better learning outcomes for students and a more effective overall program.

22. (B) Management of records
The management of records involves the systematic gathering, recording, and storage of vital information for future reference within an organization. In sports departments, this includes keeping detailed athlete profiles,

286. According to the passage, what is a fundamental principle of effective public relations in sports?
(A) The use of one-way propaganda to control the narrative.
(B) Restricting information flow to the general public.
(C) Focusing communication efforts solely on sponsors.
(D) Engaging in consistent two-way communication.

287. The primary role of mass media in sports public relations, as described in the text, is to:
(A) Act as a financial auditor for sports organizations.
(B) Provide coaching and training to athletes.
(C) Serve as a channel for communication and publicity to a wide audience.
(D) Organize and manage sporting events.

288. The passage defines public relations in sports as a:
(A) Short-term tactic for selling event tickets.
(B) Deliberate and sustained effort to build positive relationships.
(C) Reactive measure used only during a crisis.
(D) Financial strategy to attract major sponsors.

289. Which of the following is NOT mentioned as a necessary qualification for a Public Relations Officer in sports?
(A) Excellent communication skills.
(B) Strong relationships with media personnel.
(C) A deep understanding of the sports industry.
(D) A professional coaching certification.

290. Based on the passage, a Public Relations Officer creating a campaign to highlight a team's community service activities is engaging in an effort to:
(A) Build goodwill and a strong reputation for the organization.
(B) Directly increase ticket sales for the next game.
(C) Analyze the team's on-field performance.
(D) Secure a new equipment contract.

Direction : Please read the following source carefully.

The successful organization of physical education and sports programs within an institutional setting hinges on the seamless integration of various management functions. It is insufficient to excel in one area, such as personnel management, while neglecting others like financial or facility management. The guiding principles for organizing such programs necessitate a holistic approach. For instance, planning a new intramural league (event management) is impossible without capable personnel (personnel management) to officiate and administrate, a clearly defined budget (financial management) to cover costs for equipment and awards, and safe, well-maintained courts or fields (facility management). A breakdown in any one of these interconnected areas can jeopardize the entire program. A well-recruited team of coaches cannot be effective if they lack the necessary financial resources for travel and equipment. Similarly, a state-of-the-art stadium is of little value without a structured event plan and the skilled staff to run it. Therefore, the sports manager or administrator must possess a conceptual view, understanding that their role involves orchestrating these different functions in a coordinated manner to deliver a high-quality, safe, and effective sports program that meets the institution's objectives.

Based on the above source, attempt the following five questions.

291. What is the central argument of the passage regarding the organization of sports programs?
(A) Financial management is the single most important function.
(B) Facility management should be outsourced to external agencies.
(C) Successful organization requires the integration of multiple management functions.
(D) Personnel management is a standalone function with little impact on others.

292. The passage provides an example of planning an intramural league to illustrate:
(A) The interdependence of event, personnel, financial, and facility management.
(B) The superiority of event management over other functions.
(C) The financial challenges inherent in all sports programs.
(D) The primary role of officials in the success of a program.

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rather than control or fault-finding. By involving the teacher in the improvement process, the supervisor fosters a positive professional climate that encourages innovation and self-reflection. This democratic style of leadership supports long-term professional growth and leads to more effective teaching and better student outcomes.

30. (C) (ii), (iii), and (v)
Planning sports infrastructure requires prioritizing safety standards, multi-purpose functionality, and long-term sustainability. Managers must ensure that facilities comply with regulations to protect users and plan for future growth to maximize utility. Additionally, considering maintenance costs is essential for the facility's longevity. Neglecting accessibility for differently-abled users or focusing only on one sport limits the program's reach and effectiveness. A holistic approach to infrastructure management ensures that the facility remains a valuable asset for the entire community.

31. (A) Human skill
Human skill refers to the ability of a manager to work effectively with individuals and groups, fostering motivation and cooperation. In sports management, this involves understanding the needs of athletes, coaches, and staff to build a cohesive team environment. Strong interpersonal skills allow managers to resolve conflicts, communicate vision, and inspire others toward shared goals. This skill is vital at all levels of administration, as successful organizational outcomes depend largely on the quality of human interactions and relationships.

32. (B) Generating revenue exclusively for the media houses.
Mass media plays a crucial role in promoting physical education by raising awareness, creating role models, and educating the public about healthy lifestyles. While media houses do generate revenue, their primary function in a sports context should be to provide information and inspire participation. By showcasing athletic achievements and highlighting the benefits of physical activity, mass media helps build community interest and support for sports programs. This broad reach is essential for fostering a culture of health and fitness.

33. (C) P-2, Q-4, R-3, S-1
Management principles like Unity of Command ensure employees receive orders from only one superior, while Unity of Direction groups activities with similar objectives under one head. Authority and Responsibility link the right to give orders with accountability, and Esprit de Corps promotes teamwork and harmony. Applying these principles consistently creates a structured and positive organizational environment. This clarity in roles and goals improves efficiency and boosts morale within the sports department, leading to more successful outcomes.

34. (A) active listening and providing clear, concise information.
Effective communication for a sports administrator relies on active listening and the ability to provide clear, concise information. By listening attentively to the concerns of staff and athletes, administrators can make informed decisions and build trust. Clear communication ensures that instructions and organizational goals are understood without confusion. This skill minimizes errors and fosters a collaborative environment where every team member feels heard and valued. Avoiding jargon and maintaining transparency are also essential for professional administrative success.

35. (C) Incremental budgeting
Incremental budgeting is a traditional method where the upcoming budget is prepared by making minor adjustments to the previous year's figures. This approach assumes that existing programs are still relevant and focuses on inflationary changes or slight increases in needs. While simple to implement, it may not encourage a critical review of resource allocation. In sports departments, this method provides financial stability but may overlook the need for significant shifts in funding to support new initiatives or changing priorities.

36. (A) Both A and R are true and R is the correct explanation of A.
The principle of 'Unity of Command' is vital for effective personnel management because it prevents the confusion that arises when an employee receives conflicting orders from multiple superiors. By ensuring that each staff member reports to only one manager, the

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of individuals working in isolation. In a sports context, building a strong team spirit among coaches and staff is essential for creating a positive environment that supports the overall success of athletic programs.

92. (B) Time management
The Pomodoro Technique, Eisenhower Matrix, and time blocking are all recognized methods for improving time management. These tools help administrators prioritize tasks, stay focused, and use their time more efficiently. By implementing structured time management strategies, managers can reduce stress and ensure that both urgent and important tasks are completed on time. These methods are essential for maintaining productivity in the demanding environment of sports administration, allowing leaders to balance daily operational duties with long-term strategic planning.

93. (B) P-2, Q-4, R-1, S-3
Financial concepts in management include budgeting as a plan for income and expenditure, and auditing as an independent examination of financial records. Purchase mechanics define the systematic procedure for acquiring goods, while financial planning determines how the organization will achieve its long-term strategic goals. Understanding these various functions is essential for maintaining fiscal responsibility and ensuring that resources are used effectively. By integrating these processes, sports administrators can maintain a healthy financial state and support the growth of their programs.

94. (D) To enforce a rigid and uncreative curriculum.
The objectives of supervision include improving teaching techniques, promoting teacher growth, and ensuring student development. Supervision should encourage creativity and innovation rather than enforcing a rigid curriculum. By providing instructional leadership and support, supervisors help educators adapt their methods to meet the needs of their students. This flexible approach fosters a dynamic learning environment where physical education programs can evolve and improve. A supervisor's role is to facilitate excellence through professional guidance and collaborative problem-solving within the department.

95. (A) The process of acquiring or obtaining the facility and its equipment.
Procuring in the context of facility management specifically refers to the process of acquiring or obtaining the physical facility and its necessary equipment. This phase involves managing the financial and legal aspects of getting the infrastructure ready for use. It includes everything from purchasing land to securing contracts for construction and equipment delivery. Procurement is a critical stage that requires careful coordination to ensure that all assets are obtained within budget and according to the organization's specific needs and standards.

96. (C) A is true but R is false.
Human skills are essential for sports managers because they must interact effectively with people at all levels of the organization, including athletes, staff, and subordinates. These skills are not limited to high-level executives; they are vital for building teams, resolving conflicts, and motivating everyone involved in the sports program. Effective communication and interpersonal relationships are the foundation of successful leadership. By mastering human skills, managers can foster a cooperative environment that enhances productivity and achieves the organization's goals more effectively.

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97. (B) conducting the event as planned.
The execution phase of event management involves the actual conducting of the event according to the developed plan. During this stage, staff and volunteers carry out their assigned duties to ensure that the competition, ceremony, or tournament proceeds smoothly. Execution requires active coordination and problem-solving to address any issues that arise in real-time. By focusing on the delivery of the event, management ensures that the participants and spectators have a positive experience, fulfilling the objectives established during the planning phase.

98. (A) A television channel broadcasting a live football match.
Broadcasting a live match on television is a prime example of using mass media for publicity in sports. This broad dissemination of information reaches a large audience and raises awareness about the event and the athletes. Mass media

empowering staff to take ownership of specific responsibilities. Effective delegation requires clear communication of expectations and providing the necessary resources for success. By utilizing the strengths of the entire team, administrators can increase departmental efficiency, foster professional growth, and achieve organizational objectives more effectively and timely.

44. (C) Statement I is correct, but Statement II is incorrect.
Financial management primarily aims to ensure that an organization has sufficient funds to meet its obligations and achieve its long-term goals. Its scope is much broader than simple bookkeeping; it includes financial planning, resource allocation, and internal control. While recording transactions is a foundational part of the process, strategic financial management focuses on maximizing organizational value and ensuring fiscal sustainability. This comprehensive approach is essential for the effective operation and growth of any modern sports organization.

45. (A) (i), (ii), and (iv)
Recognized techniques of supervision in educational settings include classroom observation, inter-visitation programs, and conducting workshops or seminars. These methods focus on providing professional support and opportunities for educators to learn from one another. By using diverse techniques, supervisors can address different instructional needs and encourage continuous professional growth. This proactive approach contrasts with fault-finding or passive methods, ensuring that the teaching of physical education remains effective, innovative, and aligned with current pedagogical standards and institutional goals.

46. (D) Maintenance
Maintenance is the systematic process of repairing, servicing, and upkeeping sports facilities and equipment to ensure their optimal functionality and longevity. Regular maintenance prevents small issues from becoming costly repairs and ensures a safe environment for all participants. This administrative function includes routine cleaning as well as technical inspections of specialized equipment like swimming pool filters or gymnasium floors. Proper maintenance is essential for protecting the organization's investments and providing high-quality facilities for sports and physical education activities.

47. (A) Entrepreneur
A sports manager acting as an entrepreneur focuses on identifying new opportunities for growth, such as launching a fitness program or finding new markets for a league. This decisional role involves taking calculated risks and initiating changes to improve organizational performance. By being proactive and innovative, the manager can ensure the sports program remains competitive and responsive to community needs. This role is crucial for long-term success and allows the organization to adapt to new trends in the industry.

48. (A) P-3, Q-4, R-2, S-1
Event management stages involve specific activities such as planning to define budgets and objectives, and rehearsals to conduct run-throughs of ceremonies. Reporting involves creating detailed documents of outcomes and finances, while the follow-up phase focuses on post-event tasks like sending thank-you letters to sponsors. This structured approach ensures every phase of the event is managed professionally, from initial conception to final evaluation, leading to successful outcomes and positive relationships with all stakeholders and volunteers involved.

49. (B) To secure media coverage and disseminate information without direct payment.
Publicity serves as a public relations tool designed to secure media coverage and disseminate information without direct financial payment to the media outlets. It relies on the newsworthiness of an event or achievement to gain attention from journalists and the public. Unlike paid advertising, publicity is often perceived as more credible because it appears as editorial content. Effective publicity helps sports organizations build awareness and a positive public image by highlighting their successes and contributions to the community.

50. (A) A broad range including program development, personnel, facilities, finance, and events.
The scope of management in physical education is broad, encompassing various areas such as program development, personnel management,

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leading to a more effective and dynamic physical education program for all students.

78. (C) P-3, Q-4, R-1, S-2
Maintenance considerations vary by facility type, with swimming pools requiring chemistry monitoring and wooden floors needing protection from moisture. Natural grass fields necessitate regular mowing and irrigation, while outdoor tennis courts require resurfacing to maintain a consistent playing surface. Understanding these specific requirements is essential for facility managers to ensure safety and longevity. By implementing targeted maintenance schedules, sports departments can preserve their infrastructure and provide high-quality environments for a wide range of athletic and physical activities.

79. (A) Disturbance Handler
A sports manager acts as a disturbance handler when they resolve conflicts, such as those between coaches, and address unexpected crises. This decisional role requires the ability to take corrective action and restore order within the organization. By managing disputes effectively, the manager prevents disruptions to the sports program and maintains team morale. This role is essential for navigating the complex interpersonal dynamics of athletic departments and ensuring that the focus remains on achieving common goals rather than internal conflict.

80. (B) Rehearsal
A detailed run-through of an opening ceremony is a classic example of a rehearsal in event management. Rehearsals allow organizers to identify potential timing issues, coordinate staff and volunteers, and ensure that all participants know their roles. By practicing the sequence of events before the actual meet, the management team can resolve problems in a controlled environment. This preparation is vital for ensuring that ceremonies and events proceed smoothly and professionally, providing a positive experience for both participants and spectators.

81. (C) A is true but R is false.
Successful event managers must be adept at planning and organization because event management is a complex, multi-step process that requires extensive coordination. It is not a linear, single-step activity; it involves managing budgets, schedules, personnel, and logistics simultaneously. Effective coordination ensures that all departments work together toward a successful event outcome. By recognizing the multifaceted nature of event management, administrators can better prepare for the challenges of organizing tournaments and competitions, ensuring all details are professionally managed.

82. (A) The program should be isolated from the general education curriculum.
Physical education programs should be integrated with the general education curriculum rather than isolated from it. An integrated approach ensures that sports and physical activity are recognized as essential components of a student's holistic development. Programs should remain child-centered, scientifically based, and allow for progressive skill growth. By aligning with broader educational goals, physical education can better contribute to the overall academic and social success of students, fostering a well-rounded and healthy school community for every participant.

83. (C) Self-appraisal
Self-appraisal is the process where an individual assesses their own performance, strengths, and weaknesses. This technique encourages personal accountability and self-reflection, allowing employees to take an active role in their professional development. In sports management, self-appraisal helps coaches and administrators identify areas where they can improve their skills and effectiveness. By comparing their performance against set standards, individuals can set personal goals and work toward continuous improvement, contributing to the overall success of the athletic department.

84. (D) To ensure that financial resources are obtained and used effectively and efficiently.
The fundamental purpose of financial management in a sports organization is to ensure that financial resources are obtained and used both effectively and efficiently. This involves careful planning, budgeting, and control to support the organization's goals. Strategic financial management ensures that funds are available for essential programs and

Programs should offer a variety of activities beyond just competitive sports to ensure broad engagement. By regularly assessing the program's effectiveness, administrators can make necessary adjustments to improve quality and relevance. These principles foster an inclusive environment where all students can develop physically and socially, aligning with the core educational mission of providing holistic development through high-quality physical activity.

58. (A) To effectively recruit, develop, and motivate human resources.
A primary objective of personnel management is to effectively recruit, develop, and motivate the organization's human resources. By attracting talented individuals and providing them with training and support, sports departments can build a high-performing team. Motivated staff members are more productive and committed to achieving organizational goals. This focus on human capital is essential for maintaining a positive work culture and ensuring that the physical education program is led by skilled and dedicated professionals.

59. (D) Principle of Goal-Orientation
The principle of goal-orientation in financial management dictates that all financial decisions should be made with a clear understanding of how they impact the organization's primary objectives. Every expenditure and investment should align with the mission of the sports department, ensuring that resources are used to further educational and athletic goals. This strategic approach prevents wasteful spending and ensures that the budget supports the most critical priorities. By staying focused on goals, administrators can maintain fiscal discipline and institutional success.

60. (B) (i), (iii), and (iv)
Supervisors in physical education are responsible for assisting teachers with instructional methods, helping select equipment, and evaluating the overall program for improvement. Their role is to provide professional support and leadership rather than handling all school financial transactions or teaching every class themselves. By focusing on teacher development and program quality, supervisors ensure that the curriculum is delivered effectively and that students receive a high standard of education. This guidance is essential for maintaining excellence in sports programs.

61. (C) conducting a feasibility study and needs assessment.
Planning for a sports facility must begin with a feasibility study and needs assessment to determine if the project is viable and what features are required. This initial step ensures that the facility will meet community demands and fit within the organization's long-term goals and budget. By gathering data early, managers can avoid costly mistakes and ensure the final structure is functional and well-utilized. This data-driven approach is the foundation of successful infrastructure development and effective resource management.

62. (D) Monitor
A sports manager acts as a monitor when they review game statistics, attendance figures, and other data to identify trends and assess performance. This informational role involves scanning the environment to gather relevant information that can inform future decisions. By staying informed about the department's successes and challenges, the manager can proactively address issues and capitalize on opportunities. Monitoring is essential for maintaining organizational control and ensuring that the sports program continues to meet its performance objectives.

63. (B) P-4, Q-3, R-2, S-1
Administrative skills in sports involve communication to explain drills, time management to schedule tasks, and delegation to assign responsibilities like equipment inventory. Self-appraisal allows administrators to reflect on their own performance during critical situations. Utilizing these skills effectively ensures that the department operates smoothly and that resources are managed efficiently. By balancing these various administrative functions, sports managers can foster a productive environment and achieve long-term goals, while also supporting the professional growth of their entire staff.

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64. (B) To complete post-event activities like sending thank you notes and settling accounts.
The follow-up procedure in event management is designed to complete all post-event activities, such as settling financial accounts and sending thank-you notes to sponsors and volunteers. This phase is crucial for maintaining positive relationships and ensuring accountability for the event's resources. By professionally closing out the event, managers can build goodwill and secure future support for the sports program. Follow-up also provides an opportunity to gather final data and feedback, which is essential for improving future events.

65. (B) Publicity
A news article about a school's 'Health and Fitness Week' serves as an example of publicity, which provides media coverage without direct payment from the organization. Publicity highlights newsworthy events and achievements, helping to build a positive public image and raise awareness about physical education programs. Because it is presented as editorial content, it often carries more weight and credibility with the public than traditional advertising. Effective publicity is a vital tool for gaining community interest and institutional support.

66. (A) Both A and R are true and R is the correct explanation of A.
Management of records is a critical aspect of facility management because accurate documentation of maintenance, warranties, and usage patterns is essential for efficient operation. These records provide a historical log that informs future planning and ensures legal compliance with safety regulations. Without proper record-keeping, managers may struggle to track repairs or justify budget requests. Maintaining detailed information protects the organization's assets and supports long-term sustainability, making it an indispensable part of professional sports facility and infrastructure management.

67. (C) Principle of maximum individualism.
Personnel management is based on principles such as fair remuneration, team spirit, and scientific selection, which focus on organizational harmony and efficiency. 'Maximum individualism' is not a recognized principle, as effective management emphasizes cooperation and the alignment of individual interests with the general interest of the organization. By fostering a collective spirit and treating employees fairly, sports departments can create a more cohesive and productive workforce. This collaborative approach is essential for achieving the complex goals of athletic programs.

68. (D) Conducting a self-appraisal of communication skills.
The mechanics of purchase involve specific financial procedures such as inviting tenders, placing supply orders, and making payments for goods. These steps ensure transparency and efficiency in the acquisition of resources for the sports department. Conducting a self-appraisal is a personnel management task rather than a component of the purchasing process. By following proper purchase mechanics, administrators can manage the budget effectively and ensure that the organization obtains high-quality equipment and services through fair and structured competitive bidding.

69. (A) II, IV, III, I
Supervisory techniques range from informal chats to formal evaluative reports. An informal chat is the least directive, focusing on casual feedback, while a departmental workshop provides structured guidance. Scheduled observations followed by conferences are more formal, providing targeted instructional support. The most formal and directive technique is the written evaluative report, which documents performance for administrative records. Moving through these levels allow supervisors to provide varying degrees of support and oversight based on the needs of the teacher.

70. (B) impact of weather and environmental factors on outdoor facilities.
The primary difference in maintaining indoor and outdoor facilities is the impact of weather and environmental factors on outdoor spaces. Outdoor facilities, such as grass fields and athletics tracks, are constantly exposed to rain, sun, and temperature fluctuations, requiring more frequent care like mowing and irrigation. Indoor facilities are protected from the elements but still require routine cleaning and climate control. Understanding these environmental challenges is crucial for facility managers to

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allocate resources effectively and ensure the longevity of all sports infrastructure.

71. (D) Technical Skill
Technical skill involves the ability to use specialized knowledge, procedures, and techniques within a specific field. In sports management, this might include expertise in coaching drills, financial auditing, or facility maintenance procedures. While human and conceptual skills are vital for leadership, technical skills ensure that specific tasks are performed accurately and efficiently. Managers must possess a baseline of technical competence to understand the work being performed by their subordinates and to provide effective guidance in day-to-day operations.

72. (C) (i), (ii), and (iv)
The planning phase of event management involves setting clear objectives, developing a detailed budget, and creating a timeline for major tasks. Identifying and coordinating volunteers is also a critical part of the process, rather than something to be ignored. By establishing a solid plan, managers can ensure that all resources are aligned and that the event proceeds according to its intended goals. Thorough planning minimizes the risk of unforeseen problems and provides a clear roadmap for the entire organizing committee.

73. (C) Mutual interest
The principle of mutual interest in public relations emphasizes creating a positive image and fostering goodwill by highlighting how the organization's goals align with the interests of the public. This approach builds long-term relationships based on trust and shared benefits. In physical education, demonstrating how sports programs improve community health and student well-being helps secure public support. By focusing on mutual interest, organizations can move beyond mere promotion to establish themselves as valuable and integral members of the broader social community.

74. (A) the line of authority from top management to the lowest ranks.
The "Scalar Chain" is a classical management principle that refers to the formal line of authority from the highest level of management to the lowest ranks. This chain defines the communication path within the organization, ensuring that every employee knows their direct superior and subordinates. While clear lines of authority are essential for discipline and order, modern organizations sometimes allow for "gang planks" to speed up communication across departments. This structure provides a stable framework for organizational management.

75. (B) (i), (ii), (iii), and (v)
Essential administrative skills include effective task prioritization, clear communication of goals, and the ability to delegate based on staff strengths. Additionally, responding to crises with a calm, problem-solving approach is vital for maintaining organizational stability. Avoiding self-assessment is a weakness; instead, administrators should regularly evaluate their own performance to identify areas for growth. By mastering these skills, sports administrators can improve departmental efficiency, foster a positive work environment, and ensure that the sports program achieves its long-term strategic objectives.

76. (B) Zero-based budget
A zero-based budget is prepared from scratch each period, requiring every expenditure to be justified as if the program were starting for the first time. Unlike incremental budgeting, it does not rely on previous year's figures as a baseline. This method encourages a thorough review of all activities and costs, ensuring that resources are allocated only to the most effective and necessary programs. In sports management, zero-based budgeting can help identify inefficiencies and reallocate funds to new, high-priority athletic initiatives.

77. (A) Both Statement I and Statement II are correct.
The primary importance of supervision is to improve instruction and student learning by providing guidance and professional support to teachers. Modern techniques emphasize a democratic and cooperative approach, where supervisors work alongside staff to achieve shared goals. This collaborative style fosters a positive professional climate and encourages innovation. By moving away from authoritarian methods, institutions can create an environment where educators feel valued and empowered, ultimately

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organization maintains clear lines of authority and discipline. this clarity helps employees focus on their specific tasks and reduces the likelihood of interpersonal conflict, ultimately improving the overall efficiency and coordination within the sports department and organization.

37. (C) acquiring the land, construction services, and necessary equipment.
Procuring in facility management involves the essential steps of acquiring land, construction services, and the equipment necessary to make a facility operational. This phase moves beyond planning by securing the physical resources required to build the infrastructure. For a new gymnasium, this means managing contracts with builders and suppliers to ensure the project is completed to specification. Procurement is a critical stage that requires careful financial management and coordination to ensure that all assets are obtained efficiently.

38. (B) Informational
A sports manager acting as a spokesperson performs an informational role by representing the organization to external stakeholders and the media. This role involves communicating the department's views, achievements, and policies to the public. By providing accurate information, the manager helps shape the organization's image and builds credibility with the community. This function is essential for maintaining transparent communication and ensuring that the public remains informed about the sports program's activities, successes, and future plans and developments.

39. (A) II, IV, I, III
Preparing a budget follows a logical order starting with the collection of data and estimation of needs. Once needs are identified, departmental requests are consolidated and justified to ensure fiscal responsibility. The next step is the formal submission and approval of the budget by higher authorities. Finally, the approved budget is executed and controlled throughout the fiscal period. This structured process ensures that financial resources are allocated strategically and used effectively to support the organization's goals.

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40. (A) To ensure all necessary tasks and items are accounted for and completed.
A checklist is an essential administrative tool in event management used to ensure that every necessary task and item is accounted for and completed. It provides a systematic way to track progress and prevents important details from being overlooked during the hectic planning and execution phases. By using a checklist, event managers can maintain organizational control, coordinate with various teams effectively, and ensure that the sports event proceeds smoothly and professionally according to the planned schedule.

41. (C) Strong writing skills, media relations experience, and a degree in communication.
A Public Relations Officer in a sports federation requires strong writing skills and media relations experience to communicate effectively with the public. A degree in communication provides the theoretical foundation necessary for managing an organization's image and handling complex media interactions. This qualification ensures that the officer can craft professional messages and build positive relationships with journalists and stakeholders. Their expertise is vital for maintaining the federation's reputation and ensuring that sports news is disseminated accurately and positively.

42. (D) (i), (iii), and (iv)
Organizing effective sports programs requires prioritizing participant safety, maintaining adequate facilities, and aiming for the holistic development of students. These principles ensure that programs are beneficial, safe, and inclusive for all participants. By focusing on student needs and continuous evaluation, institutions can create dynamic programs that adapt to changing interests. Holistic development emphasizes not just physical skill, but also social and emotional growth, aligning with the broader educational mission of the institution and the sports department.

43. (D) Delegation
Delegation is a core administrative skill that involves breaking down large, complex tasks into smaller, manageable parts and assigning them to appropriate personnel. This process allows managers to focus on strategic planning while

that spending is monitored to prevent waste. By maintaining fiscal discipline and transparency, sports administrators can provide high-quality services and facilities while ensuring the long-term financial stability of the institution.

85. (C) To develop a positive and supportive professional climate.
A key responsibility of a supervisor in physical education is to develop a positive and supportive professional climate. By fostering an environment of mutual respect and cooperation, supervisors can encourage teacher innovation and professional growth. This supportive atmosphere is essential for effective communication and collaboration within the department. While supervisors assist with instructional leadership and program evaluation, their primary focus is on creating a climate where staff members feel valued and empowered to deliver the best possible education to students.

86. (B) Management of records
Management of records in a sports facility involves keeping detailed information about equipment warranties, maintenance schedules, and facility usage patterns. These records provide an essential historical log that supports efficient operations and future planning. By maintaining accurate documentation, managers can ensure safety compliance and justify budget requests for repairs or upgrades. Record management is a vital administrative function that protects the organization's assets and ensures that all facility activities are documented for legal and operational accountability.

87. (B) (i), (iii), and (iv)
Modern sports managers require a deep understanding of business principles, strong leadership skills, and knowledge of current industry trends. They must be adaptable and able to communicate effectively with diverse stakeholders. An inability to adapt is a significant weakness in the rapidly changing sports environment. By combining management expertise with a passion for sports, professional managers can guide their organizations through complex challenges and ensure long-term success. These qualities are essential for effective leadership in today's competitive sports industry.

88. (A) Reporting and Follow-up
The final stage of event management includes reporting and follow-up, which involve evaluating the event's success and documenting lessons learned. Reporting provides a comprehensive summary of financial outcomes and operational challenges, while follow-up focuses on settling accounts and maintaining relationships with sponsors and volunteers. This phase is crucial for organizational learning and ensuring that future events are even more successful. By professionally closing out an event, management demonstrates accountability and builds a foundation for long-term community and institutional support.

89. (C) Public relations
Issuing a press release to announce the hiring of a high-profile coach is an activity related to public relations. This strategic communication aims to build interest, enhance the institution's image, and keep the public informed about major organizational changes. Public relations focuses on managing the flow of information to create a positive perception of the sports program. By using media channels to share newsworthy updates, departments can generate excitement and support from fans, stakeholders, and the broader community.

90. (C) (i), (iii), and (iv)
Principles of public relations emphasize that communication should be honest, credible, and continuous. It requires research and evaluation to measure effectiveness and understand public opinion. PR is a two-way process that involves listening to the public rather than just providing a one-way flow of information. By maintaining a sustained effort and avoiding manipulation, physical education departments can build lasting relationships and goodwill. These ethical principles ensure that the organization remains respected and supported by its community over the long term.

91. (D) promoting team spirit and unity.
The management principle of 'Esprit de Corps' emphasizes the importance of promoting team spirit and unity among employees. By fostering a sense of harmony and mutual support, managers can improve organizational morale and productivity. This principle suggests that a cohesive team is more effective than a collection

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facility maintenance, financial control, and event organization. This comprehensive approach ensures that all aspects of a sports department function harmoniously to achieve educational and athletic goals. By managing resources effectively across these diverse domains, administrators can provide high-quality programs that meet the needs of all participants. This multi-faceted role is essential for the overall success and sustainability of sports institutions.

51. (A) Both A and R are true and R is the correct explanation of A.
Effective time management is a critical skill for physical education administrators because it allows them to prioritize tasks and reduce stress. By managing time efficiently, administrators can achieve organizational goals more effectively, which leads to improved program quality. This skill enables leaders to dedicate appropriate attention to planning, staff supervision, and student needs. Ultimately, systematic time management fosters a more productive work environment and ensures that the sports department operates smoothly while meeting all professional and institutional deadlines.

52. (D) specific procedures and steps involved in acquiring goods and services.
The 'mechanics of purchase' refers to the specific procedures and steps required to acquire goods and services for an organization. This process includes identifying needs, inviting tenders, evaluating bids, and issuing formal purchase orders. By following a structured purchasing process, sports departments can ensure transparency, get the best value for their budget, and maintain accurate financial records. Understanding these mechanics is essential for administrators to manage resources responsibly and ensure that the department has the necessary equipment.

53. (C) personally coaching every sports team in the school.
A supervisor's duties focus on providing instructional leadership and evaluating the physical education curriculum to ensure educational quality. While they facilitate professional development for staff, they do not personally coach every sports team. Their role is to support and guide teachers and coaches, rather than taking over their specific technical responsibilities. By maintaining a high-level overview of the program, supervisors can implement improvements and ensure that all staff members have the resources and skills needed for success.

54. (B) II, III, I, IV
The lifecycle of a sports facility follows a logical progression starting with planning and design, where needs are identified and blueprints created. This is followed by procurement and construction to bring the design to life. Once built, the focus shifts to maintenance and operation to ensure daily functionality and safety. Finally, the cycle ends with disposal or renovation as the facility ages or needs change. This systematic approach ensures that infrastructure remains safe, modern, and cost-effective over time.

55. (D) Conceptual Skill
According to Robert Katz's model, the importance of conceptual skill increases as a manager moves to higher levels of administration. While technical skills are vital at lower levels, top-level managers must be able to think strategically and understand the organization as a whole. Conceptual skill allows leaders to recognize complex interrelationships and plan for long-term success. This ability to view the "big picture" is essential for making major policy decisions and guiding the institution through significant organizational challenges.

56. (A) Itinerary
An itinerary is the specific document that outlines the step-by-step sequence of an event, including precise timings and assigned responsibilities. It serves as a vital communication tool for organizers, participants, and staff to ensure everyone is synchronized during the event. By detailing every phase of the schedule, an itinerary helps prevent confusion and ensures that complex activities, such as tournaments or ceremonies, proceed on time. This level of organization is essential for the professional execution of any sports event.

57. (B) (i), (iii), and (iv)
Guiding principles for organizing sports programs emphasize participant safety, catering to diverse student interests, and continuous evaluation.

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coverage provides a platform for showcasing achievements and generating public interest and support. By utilizing television, radio, and digital platforms, sports organizations can build their brand and reach fans far beyond the local community, which is essential for modern sports promotion.

99. (C) Scientific Management
Scientific Management is a theory that focuses on improving efficiency and productivity by using scientific methods to study work processes. It emphasizes the standardization of tasks and the selection of the most efficient way to perform a job. In a sports context, this might involve analyzing training methods or facility maintenance tasks to maximize output and reduce wasted effort. While modern management has evolved to include more human-centered theories, the focus on efficiency remains a foundational part of organizational administration.

100. (D) misunderstanding, errors, and decreased productivity.
Poor communication skills in an administrator can lead to significant organizational problems, including misunderstandings, frequent errors, and a decline in overall productivity. When instructions are unclear or goals are not communicated effectively, staff members may struggle to perform their duties correctly. This lack of clarity can also damage team morale and lead to increased conflict within the sports department. Effective communication is essential for coordinating activities, building relationships with stakeholders, and ensuring that the entire organization works together toward shared objectives.

101. (C) every item of expenditure in the budget proposal must be explained and defended.
Justification is a key principle of budgeting which requires that every proposed expenditure be explained and defended. This process ensures that funds are requested only for necessary items and that the budget aligns with the organization's priorities. By providing a clear rationale for each cost, administrators demonstrate fiscal responsibility and transparency to their stakeholders. Justification encourages a more careful review of resources and helps prevent wasteful spending, ensuring that the sports department's budget is used effectively to support its goals.

102. (C) (i), (iii), and (iv)
Supervision is crucial for maintaining educational standards, providing guidance to new teachers, and ensuring that curriculum objectives are achieved. It should foster a sense of community and support rather than isolation among staff. By using diverse supervisory techniques, institutions can support professional development and improve the quality of physical education. This proactive approach ensures that the program remains effective and responsive to the needs of students, while also helping educators refine their skills and achieve their full professional potential.

103. (D) the condition of the track surface, drainage, and lane markings.
Managing an outdoor athletics track requires constant attention to the condition of the track surface, its drainage system, and the visibility of lane markings. Because it is exposed to the elements, regular maintenance is essential to prevent wear and ensure the safety of athletes. This include cleaning debris, checking for cracks, and ensuring that water does not pool on the surface after rain. Proper upkeep preserves the facility's quality and ensures it remains a safe and professional environment for competitive sports.

104. (A) Disseminating key information to subordinates.
Disseminating key information to subordinates is a primary informational role of a manager. This involves sharing relevant data, organizational goals, and policy changes to ensure that everyone is informed and aligned. Effective information flow is essential for coordinating tasks and maintaining institutional transparency. By acting as a central point of communication, the manager ensures that the staff has the knowledge needed to perform their duties effectively. This role is fundamental to successful organizational leadership and the smooth operation of sports departments.

105. (D) (i), (ii), (iii), and (iv)
A comprehensive plan for an event must include detailed checklists, precise itineraries, contingency plans for potential problems, and

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aligned with the department's most current and important strategic priorities.

119. (D) Conducting a demonstration lesson for teachers.
Conducting a demonstration lesson is a highly effective supervisory technique that provides teachers with a concrete example of successful instructional methods. By modeling best practices, supervisors can show educators how to implement new strategies or handle specific classroom challenges. This hands-on approach is more supportive than simple command-based methods and encourages professional growth through direct observation and dialogue. Demonstration lessons serve as a valuable tool for instructional leadership, helping to raise the standard of physical education throughout the department.

120. (A) (i), (ii), (iii), and (iv)
Managing records for a sports facility involves keeping accurate equipment inventories, safety inspection reports, and maintenance logs. Warranty information for specialized equipment should also be carefully stored. Financial records must be kept for accountability rather than discarded. By maintaining comprehensive records, facility managers can ensure safety compliance, plan for future repairs, and justify budget requests. This organized approach protects the institution's investments and provides a historical record that is essential for legal and operational transparency in sports management.

121. (C) Technical skill
A coach's ability to teach specific skills, such as a proper tennis serve, is a clear example of technical skill. This involves mastery of the procedures, techniques, and knowledge specific to their field of expertise. While human and conceptual skills are important for overall management, technical skills are essential for providing direct instruction and training. Coaches must possess high-level technical competence to effectively develop their athletes' skills and ensure that training is performed correctly and safely for optimal performance outcomes.

122. (A) creating a final document that details the event's activities, attendance, financial outcomes, and challenges.
The reporting phase of event management involves creating a final document that summarizes the event's activities, attendance, financial outcomes, and any challenges faced. This report serves as a formal record for accountability and provides valuable data for future planning. By documenting what worked well and what needed improvement, organizers can ensure that subsequent events are even more successful. Reporting is a vital part of the professional management process, providing transparency to stakeholders and a basis for organizational learning and improvement.

123. (D) P-2, Q-3, R-1, S-4
Public relations tools include press releases for distributing news, and press conferences for interactive statements with journalists. Publicity refers to non-paid media coverage, while lobbying involves influencing public policy through communication with officials. Each tool serves a specific function in managing an organization's relationship with its public and stakeholders. By utilizing a diverse range of PR strategies, sports organizations can effectively communicate their mission, celebrate their achievements, and maintain a positive and professional image in the community.

124. (B) all related activities should be under one manager with one plan.
The principle of 'Unity of Direction' states that all organizational activities with the same objective should be directed by a single manager using a single plan. this principle ensures that the entire department works toward common goals without conflicting efforts. By unifying direction, the organization can coordinate its resources more effectively and improve overall efficiency. In a sports context, this means ensuring that all training, competition, and administrative activities are aligned under one strategic plan to achieve the program's primary objectives.

125. (C) Self-appraisal
An administrator practicing self-appraisal regularly evaluates their own effectiveness in areas like leadership, communication, and time management. This reflective process allows them

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112. (B) long-term sustainability, user safety, and multi-purpose functionality.
Planning for sports infrastructure must prioritize long-term sustainability, user safety, and multi-purpose functionality over mere aesthetics. Facilities should be designed to serve diverse needs and remain useful for many years while providing a safe environment for all participants. By focusing on these core principles, administrators can ensure that the infrastructure is a cost-effective and valuable asset for the institution. Multi-purpose designs allow for greater flexibility in programming, ensuring that the facility can adapt to changing sports trends and community demands over time.

113. (B) Resource Allocator
When a sports manager allocates funds, personnel, and equipment, they are performing the decisional role of a resource allocator. This role involves making strategic choices about how to distribute limited resources among various teams and projects to achieve the organization's goals. Effective resource allocation ensures that the most critical priorities are funded and that every department has the support it needs to succeed. This function is essential for maintaining operational efficiency and ensuring that the sports program remains financially and organizationally sustainable.

114. (A) a detailed schedule of travel, accommodation, practice, and match times.
An itinerary for a touring sports team contains a detailed schedule of travel, accommodation, practice times, and match fixtures. It provides a clear roadmap for the entire tour, ensuring that all players and staff are synchronized and on time for their various commitments. By detailing these logistics, an itinerary helps minimize confusion and allows the team to focus on their performance. This organized approach is essential for managing the complexities of travel and ensuring the tour is conducted professionally and efficiently.

115. (C) planned and sustained effort to establish and maintain mutual understanding.
Public relations is a fundamental principle that involves a planned and sustained effort to establish and maintain mutual understanding between an organization and its public. It is not a one-time campaign but an ongoing process of communication and relationship-building. By consistently sharing information and listening to stakeholders, sports organizations can build long-term trust and goodwill. This strategic approach ensures that the organization's mission and achievements are understood and supported by the community, contributing to its overall success and positive public image.

116. (D) ensure opportunities for mass participation.
A guiding principle for organizing a school sports day is to ensure opportunities for mass participation. This inclusive approach ensures that all students, regardless of their athletic ability, can benefit from the physical and social aspects of the event. While healthy competition is important, the primary goal should be to encourage a wide range of students to participate and enjoy physical activity. This aligns with the broader educational goal of promoting health and fitness for all students, rather than just a few elite performers.

117. (B) (i), (ii), and (iv)
Objectives of personnel management include procuring the right people, providing fair wages, and maintaining high employee morale. Professional development and training should always be prioritized to ensure that staff members have the skills needed for their roles. By focusing on these areas, sports organizations can attract and retain talented individuals and create a productive work environment. Effective personnel management fosters a sense of commitment and teamwork, which is essential for the long-term success of any athletic department or institution.

118. (B) Zero-Based Budgeting
Zero-based budgeting requires every expense to be justified from a "zero" base for the upcoming period, rather than relying on previous year's figures. This method encourages managers to critically evaluate every program and cost to ensure they are still necessary and effective. While more time-consuming than incremental budgeting, it promotes greater fiscal responsibility and can help identify areas for potential savings or reallocation. In sports management, this approach ensures that resources are always

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events and achievements. Understanding the nature of mass media allows sports organizations to craft messages that effectively reach and engage their entire public.

159. (A) the goals of the organization should take precedence over the goals of any individual.
The principle of 'Subordination of Individual Interest to General Interest' means that the overall goals of the organization must come before the interests of any single employee or group. This principle is vital for maintaining organizational unity and ensuring that everyone works toward common objectives. In a sports department, this means that individual ambitions must be balanced against the mission of the physical education program. By prioritizing the collective success, managers can foster a more cohesive and effective institutional environment.

160. (B) objective and reflective in assessing their achievements and areas for improvement.
Effective self-appraisal requires an employee to be objective and reflective when assessing their own performance and achievements. By honestly identifying both strengths and areas for improvement, individuals can take a proactive role in their professional development. This process encourages personal accountability and helps employees align their goals with the organization's standards. In a sports setting, self-appraisal helps coaches and staff refine their methods and improve their effectiveness, contributing to the overall success and professional growth of the entire athletic department.

161. (B) employees of the organization itself.
An internal audit is conducted by employees within the organization to review financial processes and ensure compliance with internal policies. This ongoing monitoring helps identify potential errors or inefficiencies before they become major problems. Internal audits provide management with valuable information about the organization's financial health and operational effectiveness. By maintaining a strong internal audit function, sports organizations can ensure transparency, protect assets, and improve their financial management practices, leading to greater institutional accountability and long-term fiscal stability and integrity.

162. (A) Punisher - Focusing solely on penalties and reprimands
Modern supervision focuses on roles like guide, coordinator, and evaluator, which provide support and guidance rather than punishment. A "punisher" role is inconsistent with modern, democratic supervisory principles that emphasize professional growth and collaboration. While accountability is important, the goal is to help teachers improve their instruction through constructive feedback and leadership. By fostering a positive and supportive environment, supervisors can more effectively achieve high educational standards and support the long-term success of the physical education program and its staff.

163. (C) determine the types of facilities and programs the community wants and needs.
A needs assessment is a crucial first step in planning a sports facility because it determines exactly what the community and institution require. By gathering data on intended usage and desired programs, managers can ensure the final design is functional and well-utilized. This process prevents the construction of unnecessary or inadequate facilities and ensures the project is a wise investment. A thorough needs assessment provides the foundational data necessary for creating a successful and community-supported sports infrastructure project.

164. (D) Expertise in an unrelated field like botany
Essential qualities for a sports manager include leadership, communication skills, and integrity, which are vital for leading teams and managing organizational goals. Expertise in an unrelated field, such as botany, is not necessary for effective performance in sports management. Instead, managers should focus on developing skills in areas like finance, marketing, and facility management. By prioritizing relevant professional competencies, sports administrators can better navigate the specific challenges of the athletic industry and ensure the success and sustainability of their programs and institutions.

165. (C) Itinerary
An itinerary is a document that details a specific sequence of events or a plan for a journey, including timings and locations. In sports management, it is used for team travel and event

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to identify personal strengths and weaknesses and set goals for professional growth. By being objective about their own performance, administrators can model the same behavior they expect from their staff, fostering a culture of continuous improvement. Self-appraisal is an essential skill for effective leadership, helping administrators refine their methods and improve their overall impact on the sports organization.

126. (A) Both A and R are true and R is the correct explanation of A.
Preparing a detailed budget is a crucial first step in financial management because it serves as a roadmap for the organization's activities. A budget allows administrators to plan for income and expenses, providing a tool for control and a way to communicate departmental priorities. By establishing a clear financial plan, the organization can ensure that resources are allocated to the most important initiatives. A well-prepared budget also provides a benchmark for evaluating financial performance throughout the year, ensuring accountability and transparency.

127. (A) Inter-visitation
Inter-visitation is a supervisory technique where teachers observe their colleagues' classes to gain new insights and ideas. This peer-to-peer learning approach fosters a collaborative professional climate and encourages the sharing of best practices. By seeing how others handle instructional challenges, educators can refine their own methods and bring fresh perspectives to their classrooms. Inter-visitation is a powerful tool for professional development, promoting a culture of continuous improvement and mutual support within the physical education department, leading to higher teaching standards.

128. (B) Planning is about deciding what to do, while procuring is about acquiring the resources to do it.
The primary difference between planning and procuring in facility management lies in their focus. Planning involves identifying needs and deciding on the types of facilities required, while procuring is the actual process of acquiring those resources, including land, construction, and equipment. Planning sets the direction and goals, whereas procurement turns those plans into reality by securing the necessary material and financial assets. Both phases are critical and must be carefully coordinated to ensure that the facility meets the organization's requirements efficiently.

129. (B) Interpersonal, Informational, and Decisional
Henry Mintzberg identified three broad categories of managerial roles: interpersonal, informational, and decisional. Interpersonal roles involve interacting with people, informational roles focus on processing and sharing data, and decisional roles involve making choices and taking actions. Effective sports managers must balance these various roles to lead their organizations successfully. By understanding these diverse functions, administrators can better manage their daily responsibilities and ensure they are meeting the complex needs of their staff, athletes, and external stakeholders in a professional manner.

130. (A) Disturbance handler
When a manager must quickly find a replacement sponsor after an unexpected withdrawal, they are performing the decisional role of a disturbance handler. This role involves taking corrective action in response to unforeseen crises that could disrupt organizational operations. By resolving these challenges effectively, the manager ensures that the sports program continues to function smoothly. Disturbance handling requires quick thinking, problem-solving skills, and the ability to maintain stability during stressful situations, which are essential for the successful leadership of any sports organization.

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131. (C) identify and resolve potential issues before the actual event.
The main objective of a rehearsal in event management is to identify and resolve potential issues before the actual event takes place. By practicing the sequence of events, organizers can ensure that all participants and staff are prepared and that timing is accurate. Rehearsals provide a controlled environment to test logistics and coordination, minimizing the risk of errors on the day of the event. This preparation is vital for ensuring a professional and smooth execution, providing a better experience for all involved.

132. (D) (i), (ii), and (iv)
Post-event procedures involve sending thank-you notes, settling all pending payments, and compiling a final report with recommendations for the future. These activities ensure accountability and help maintain positive relationships with sponsors and volunteers. Immediately planning the same event for the next week is usually not feasible or necessary. By professionally closing out an event, managers can document successes and challenges, providing a valuable foundation for the continuous improvement of future sports programs and ensuring institutional goals are met responsibly.

133. (C) the art and science of getting work done through people.
Management is best described as the art and science of getting work done through people. It involves the systematic application of functions like planning and organizing, while also requiring the interpersonal skills to lead and motivate others. This dual nature emphasizes both technical proficiency and human-centered leadership. In a sports context, management ensures that everyone within the organization is working toward common goals, utilizing resources effectively to deliver high-quality physical education and athletic programs for the benefit of all participants.

134. (B) Principle of fair remuneration and equity.
A key principle of personnel management is fair remuneration and equity, which ensures that employees are compensated fairly and treated with justice. This principle fosters a positive work environment and improves employee morale and commitment. By providing equitable treatment, organizations can build a loyal and motivated workforce. This approach contrasts with favoritism or centralized control and is essential for maintaining professional harmony within the sports department, leading to more effective team performance and a successful overall physical education program.

135. (B) (i), (ii), (iii), and (iv)
Financial management for sports organizations requires aligning activities with objectives, using funds efficiently, and maintaining accurate, transparent records. Adequate liquidity must be maintained to meet short-term obligations and ensure operational stability. Budgeting is a critical component of this process rather than an unnecessary formality. By following these principles, administrators can ensure fiscal responsibility and provide the resources needed for high-quality sports programs. Transparent financial management builds trust with stakeholders and ensures the organization's long-term sustainability and growth within the community.

136. (D) Statement I is incorrect, but Statement II is correct.
The purpose of supervision is not to find faults but rather to facilitate the professional growth of the teaching staff. A supervisor provides guidance and support to help educators improve their instructional methods and curriculum delivery. By focusing on development and leadership, supervisors help maintain high standards in physical education. This collaborative approach fosters a positive work climate and ensures that the program is continuously improving for the benefit of both the teachers and the students they serve.

137. (C) blueprints, maintenance logs, inspection reports, and equipment warranties.
Management of records for sports facilities includes maintaining blueprints, detailed maintenance logs, safety inspection reports, and equipment warranties. These records provide a comprehensive history of the facility's upkeep and are essential for planning future repairs and ensuring legal and safety compliance. By keeping organized documentation, managers can track the condition of their infrastructure and justify budget requests for necessary upgrades. This systematic record-keeping is a vital part of professional facility management, protecting institutional assets and ensuring a safe environment.

138. (A) P-4, Q-1, R-3, S-2
Managerial roles can be classified into interpersonal, informational, and decisional categories, with roles like leader, monitor, and negotiator falling within them. Additionally, human skills are a core competency identified by Robert Katz as essential for effective management. By mastering these various roles and skills, sports administrators can manage their organizations

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comprehensively. This balanced approach ensures they can lead people, process information accurately, and make strategic decisions while maintaining positive relationships, which are all vital for the successful operation of athletic programs.

139. (D) Staff and volunteers carrying out their assigned duties on race day.
The execution phase of a marathon event is characterized by staff and volunteers actively carrying out their assigned duties on race day. This involves managing the course, providing water stations, and ensuring participant safety throughout the competition. While planning and reporting are critical parts of the overall process, execution is where the actual event happens. Successful execution requires real-time coordination and problem-solving to ensure the marathon proceeds smoothly and that the athletes and spectators have a professional and safe experience.

140. (B) Public Relations
Creating and distributing media kits, which contain fact sheets and spokesperson biographies, is a central task in public relations. These materials are designed to provide journalists with the information they need to provide accurate and positive coverage of the organization. Public relations focuses on managing external perceptions and building a strong, professional image in the media. By providing well-prepared resources, sports departments can influence public narrative and ensure that their achievements and programs are communicated effectively to a broad audience.

141. (A) Both A and R are true and R is the correct explanation of A.
Planning for sports infrastructure must account for future expansion to avoid costly retrofitting and overcrowding as demand grows. A short-sighted approach can limit the program's ability to accommodate new sports or more participants, ultimately reducing its effectiveness. By considering potential future needs during the initial design phase, managers can ensure that the facility remains functional and valuable over the long term. This strategic foresight is essential for managing resources efficiently and providing high-quality sports environments that can grow with the institution.

142. (D) Theory of Relativity
Scientific Management, Administrative Management, and Human Relations are all recognized theories of management that have shaped how organizations are run. The Theory of Relativity, however, is a fundamental theory in physics and not related to organizational administration. Management theories provide frameworks for understanding how to improve efficiency, coordinate tasks, and lead people effectively. By studying these established theories, sports administrators can apply proven principles to manage their departments more professionally and achieve better outcomes for their programs, staff, and athletes.

143. (A) Avoiding all feedback
Effective communication for an administrator includes active listening, clarity, conciseness, and awareness of non-verbal cues. Avoiding feedback is a major barrier to successful communication and should be avoided. Administrators must be open to both giving and receiving feedback to ensure that goals are clear and that issues are addressed proactively. By fostering a culture of open communication, leaders can build trust and improve coordination within the sports department. Engaging with feedback is essential for continuous improvement and achieving organizational excellence.

144. (B) the range of activities and decisions it encompasses, from fund-raising to allocation.
The scope of financial management refers to the wide range of activities and decisions it covers, from fundraising and procurement of funds to their allocation and eventual control. It is not limited to a single objective or location but represents the entire lifecycle of financial resources within the organization. Strategic financial management ensures that funds are used to further the institution's primary goals. By understanding the full scope of their financial responsibilities, administrators can manage budgets more effectively and ensure the organization's fiscal health.

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a strategy for post-event follow-up. Budgetary constraints must always be respected to ensure financial sustainability. By integrating these elements, organizers can maintain control over the event from start to finish. This structured approach minimizes the risk of errors and ensures that the event is both professional and accountable, providing a solid foundation for future sports activities and maintaining positive relationships with all stakeholders.

106. (A) excellent communication and media relation skills.
The primary qualification for a Public Relations Officer in sports is having excellent communication and media relations skills. This allows the officer to effectively manage the organization's image and handle interactions with journalists and the public. Their ability to craft clear messages and build trust is vital for maintaining a positive institutional reputation. While knowledge of sports is helpful, the technical expertise in communication is the most critical factor for success in this role, ensuring that the sports organization is professionally represented.

107. (D) prescribing medical treatments for injuries.
The scope of management in physical education includes program planning, financial control, and personnel development. However, it does not include prescribing medical treatments for injuries, which is a specialized role for medical professionals like physiotherapists or doctors. Administrators must focus on the organizational and instructional aspects of sports while ensuring that safety protocols are in place. By understanding the boundaries of their role, managers can ensure that students receive professional medical care from qualified experts while they manage the broader sports program.

108. (A) P-3, Q-4, R-1, S-2
Managerial skills involve technical proficiency in a specific field, human skills for working with people, and conceptual skills to see the "big picture." Decision-making skills allow managers to choose the best course of action. Effective administrators must balance these various skills to lead their organizations successfully. While technical skills are important for day-to-day tasks, conceptual and human skills become increasingly vital at higher levels of management, where strategic planning and leadership are essential for achieving long-term organizational and program objectives.

109. (C) time management.
Time management is the essential administrative skill that involves prioritizing tasks based on their urgency and importance. By focusing on the most critical activities first, administrators can maximize their productivity and ensure that deadlines are met. This skill is vital in the fast-paced environment of sports management, where numerous tasks must be balanced simultaneously. Effective time management reduces stress and allows leaders to dedicate sufficient time to both daily operations and long-term strategic planning, improving overall organizational effectiveness.

110. (D) Verifying financial records for accuracy and compliance.
Auditing is the process of verifying financial records for accuracy and compliance with established policies and regulations. It provides an independent check on the organization's financial health and ensures that funds are being managed appropriately. This verification process is backward-looking, examining past transactions to ensure transparency and accountability. By conducting regular audits, sports organizations can maintain the trust of their stakeholders and detect any errors or irregularities in their financial management, ensuring the institution's long-term integrity and fiscal stability.

111. (A) Both A and R are true and R is the correct explanation of A.
Supervision in physical education should be a cooperative activity involving both the supervisor and the teacher to foster mutual respect and initiative. This democratic approach leads to more meaningful and lasting improvements in instruction by encouraging teachers to take an active role in their professional development. By working together, supervisors and educators can identify challenges and develop innovative solutions that enhance the learning experience for students. This collaborative spirit is essential for building a positive professional climate and achieving high educational standards.

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that institutional policies are applied fairly and consistently across all departments.

152. (A) Inflexibility
Essential skills for an administrator include decision-making, problem-solving, and communication, all of which require a degree of flexibility. Inflexibility is not a desirable skill, as managers must be able to adapt to changing circumstances and new challenges. Successful administration involves navigating complex situations and finding creative solutions to problems. By remaining open to new ideas and adjusting their strategies as needed, sports administrators can lead their organizations more effectively and ensure that their programs remain relevant and responsive to participant needs.

153. (C) Balance Sheet
A balance sheet is a financial document that provides a snapshot of an organization's assets, liabilities, and equity at a specific point in time. It is a vital tool for assessing the overall financial health of the sports organization. By reviewing the balance sheet, administrators can understand what the institution owns and what it owes, helping them make informed decisions about future investments or budget adjustments. This document ensures financial transparency and is essential for long-term fiscal planning and accountability.

154. (A) Creative
A supervisor who encourages teachers to experiment with new methods and supports innovation is fulfilling the principle that supervision should be creative. This approach focuses on professional growth and the continuous improvement of instruction rather than just compliance. By fostering a creative environment, supervisors help educators develop more engaging and effective teaching strategies. This democratic style of leadership empowers staff to take ownership of their professional development, leading to a more dynamic and successful physical education program for all students.

155. (D) Indoor facility
Managing an indoor sports hall involves coordinating bookings, equipment availability, and cleaning schedules within a controlled environment. These tasks are specific to indoor facility management, which focuses on maximizing the use of multi-purpose spaces while protecting them from wear and tear. Unlike outdoor maintenance, which handles weather elements, indoor management focuses more on climate control and the logistics of scheduling diverse activities. Effective management ensures that the hall remains a high-quality and functional resource for all sports and physical activities.

156. (B) Figurehead
When a university president presents trophies at a sports awards ceremony, they are performing the interpersonal role of a figurehead. This role involve symbolic and ceremonial duties that represent the organization to others. While the figurehead may not make daily operational decisions, their presence at major events lends prestige and official recognition to the sports program. This symbolic leadership is important for maintaining institutional tradition and building a sense of community and pride among the athletes, staff, and broader university stakeholders.

157. (C) ensuring accountability and providing a basis for future planning.
Reporting is a crucial step in event management because it ensures accountability for how resources were used and provides a factual basis for future planning. By documenting the event's successes, attendance, and financial outcomes, organizers can identify trends and areas for improvement. This structured review process allows the organization to learn from each event and refine its strategies over time. Reporting also demonstrates transparency to sponsors and stakeholders, building trust and ensuring that future sports activities are supported.

158. (D) One-to-many and impersonal.
Mass media communication for sports publicity is typically characterized as one-to-many and impersonal. It involves disseminating information to a large, diverse audience through channels like television, radio, or newspapers. While this allows for a broad reach, it lack the personal interaction of one-to-one communication. This broad dissemination is essential for raising awareness and generating widespread interest in sports

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145. (B) Classroom observation
Classroom observation is a primary supervisory technique where a supervisor directly watches a physical education class to provide constructive feedback on instructional methods. This approach allows for a first-hand assessment of teaching effectiveness and student engagement. The goal is to support the educator's professional development by identifying strengths and areas for improvement in a supportive manner. Regular observation is a vital part of instructional leadership, helping to maintain high educational standards and improve the overall quality of the physical education program.

146. (A) maintenance and upgrading.
Replacing an entire lighting system with energy-efficient LEDs is an example of facility maintenance and upgrading. This activity improves the facility's functionality and sustainability while reducing long-term operational costs. Maintenance and upgrading are essential for keeping sports facilities modern, safe, and efficient. By proactively investing in infrastructure improvements, managers can provide a better environment for athletes and fans. This strategic approach to facility management ensures that assets are preserved and continue to meet the changing needs of the sports organization.

147. (B) (i), (iii), and (iv)
Informational roles of a manager include being a monitor, disseminator, and spokesperson. These roles focus on collecting, processing, and sharing information both inside and outside the organization. A leader role is categorized as interpersonal because it focuses on guiding and motivating people. Understanding these distinctions helps sports managers manage their communication responsibilities more effectively. By acting as a central information hub, the manager ensures that everyone has the data needed to perform their roles correctly, supporting institutional transparency and effective coordination.

148. (D) Trophies, medals, list of winners, and a podium.
A detailed checklist for an awards ceremony would include practical items such as trophies, medals, a podium, and a verified list of winners. These essential elements ensure that the ceremony proceeds smoothly and that every winner is recognized correctly. By using a checklist, event organizers can manage the specific logistics of the ceremony and prevent important items from being forgotten. This level of detail is necessary for a professional and successful event, ensuring a positive experience for all participants and guests.

149. (C) build and maintain a positive image and relationship with the public.
The primary goal of public relations in sports is to build and maintain a positive image and a mutually beneficial relationship with the public. This involves consistent communication and activities that foster trust and goodwill between the organization and its community. PR is not just about sales or logistics; it focuses on the long-term reputation of the sports program. By demonstrating transparency and institutional value, public relations helps secure community support and ensures the program is viewed as a respected and integral entity.

150. (A) (i), (ii), (iii), and (iv)
Effective sports programs should be based on participant needs, prioritize safety, and follow a progressive structure with regular evaluation. While professional careers are an outcome for some, programs should focus on broader development for all students. By adhering to these principles, administrators can create inclusive and high-quality programs that foster holistic growth. Regular evaluation ensures that the program remains relevant and effective, while a focus on safety and structure provides a professional environment where students can thrive physically and socially.

151. (D) Bureaucratic Management
Bureaucratic Management is a theory that emphasizes a formal hierarchical structure, a clear division of labor, and a strict set of impersonal rules. Developed by Max Weber, this approach aims to increase efficiency and consistency within large organizations. While sometimes criticized for being inflexible, the focus on clear roles and established procedures provides a stable framework for administration. In sports organizations, bureaucratic principles can help manage complex logistics and ensure

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scheduling to ensure that everyone is informed and synchronized. By providing a clear timeline, an itinerary helps maintain order and punctuality, which are essential for professional athletic operations. This level of organization reduces confusion and allows participants and staff to focus on their primary roles during competitions and tours.

166. (B) expertise in crisis communication and media relations.
A public relations officer for a national team must possess expertise in crisis communication and media relations to effectively manage the team's image under pressure. Their ability to handle difficult situations and provide professional responses to the media is vital for protecting the team's reputation. This specialized qualification ensures that the organization can navigate public scrutiny and maintain a positive relationship with its fans and stakeholders. Their communication expertise is the most critical factor for institutional success in a high-profile sports environment.

167. (D) arranging resources, tasks, and people to carry out the plan.
Organizing in physical education management involves the systematic arrangement of resources, tasks, and personnel to execute the organization's plan effectively. This function ensures that everyone knows their role and has the necessary tools to achieve the program's objectives. By grouping activities and assigning responsibilities, managers create a structured environment that improves coordination and efficiency. Effective organization is the bridge between planning and action, ensuring that the athletic department functions harmoniously to deliver high-quality sports and educational programs.

168. (A) Informal communication
The "grapevine" is a classic example of informal communication within an organization, where information is shared outside of official channels. While it can spread news quickly, it is also prone to rumors and inaccuracies. Personnel management recognizes that informal communication is a natural part of social interactions among staff. Effective managers monitor the grapevine to understand employee morale and address concerns, while also ensuring that formal communication remains clear and transparent to provide accurate information and maintain organizational trust.

169. (C) To maximize the value of the organization.
The primary objective of financial management is to maximize the value of the organization through the effective and efficient use of its financial resources. This involves strategic planning to ensure that funds are used to achieve the institution's most important goals. By maintaining fiscal discipline and making sound investments, managers can ensure the long-term sustainability and growth of the sports program. Maximizing value means getting the best possible outcomes for athletes and the community from every available dollar spent.

170. (A) It is a continuous process of guidance for improving the total teaching-learning process.
Supervision is a continuous process of guidance and leadership designed to improve the entire teaching and learning process in physical education. It is not a one-time evaluation or a way to fire staff; instead, it provides ongoing support for teacher development and instructional excellence. By focusing on collaborative problem-solving and professional feedback, supervision helps maintain high educational standards. This supportive approach ensures that the program remains dynamic and effective, ultimately leading to better learning and development outcomes for all students.

171. (D) Routine maintenance
Routine maintenance involves the day-to-day upkeep of sports facilities, such as cleaning floors and performing basic equipment checks. These regular activities are essential for maintaining a safe and functional environment for participants and protecting the institution's infrastructure from excessive wear and tear. By staying consistent with routine care, facility managers can prevent small issues from escalating into major, expensive repairs. Proper day-to-day upkeep is a foundational part of professional facility management, ensuring that assets remain in optimal condition for use.

172. (B) Conceptual skills
A manager's ability to analyze and diagnose complex organizational situations is an

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example of their conceptual skills. These skills allow leaders to see how different parts of the institution interrelate and to understand the impact of decisions on the organization as a whole. Conceptual skills are vital for strategic planning and navigating major challenges within the sports department. By thinking critically and holistically, administrators can guide their organizations toward long-term success and ensure that their programs are strategically aligned with institutional goals.

173. (C) build long-term relationships and improving future events.
The follow-up phase of event management is critical for building long-term relationships with sponsors, volunteers, and participants while gathering data to improve future events. This stage involves settling accounts and expressing gratitude, which fosters goodwill and ensures future support for the sports program. By professionally closing out an event, managers can document successes and challenges, providing a valuable foundation for organizational learning. This sustained effort in relationship management is essential for the long-term sustainability and growth of institutional sports events.

174. (D) Manipulation and Deception
Principles of public relations emphasize honesty, integrity, and open communication to build trust with the public. Manipulation and deception are not recognized principles and can severely damage an organization's reputation and credibility. PR focuses on fostering mutual understanding and transparent communication rather than misleading the public. By adhering to ethical standards, sports organizations can build long-term goodwill and ensure they are respected by their stakeholders. Truthful communication is the foundation of professional and successful institutional public relations and image management.

175. (A) wide, encompassing all aspects from planning to evaluation of programs, personnel, and facilities.
The scope of management in physical education is wide, covering every aspect of program planning, personnel development, facility maintenance, and financial evaluation. This comprehensive role ensures that all parts of the sports department function effectively to achieve athletic and educational goals. By managing resources across these diverse domains, administrators provide high-quality programs and well-maintained environments for all participants. This broad approach is essential for the overall health and success of the institution's physical education and sports initiatives.

176. (B) Effective delegation
Effective delegation is an essential administrative skill that involves assigning tasks to personnel based on their strengths and providing them with the authority to complete them. This allows managers to focus on high-level strategic planning while empowering staff and fostering professional growth. By utilizing the entire team's expertise, administrators can increase departmental efficiency and improve productivity. Successful delegation requires clear communication of expectations and trust in the staff's ability to perform, which are key components of professional organizational leadership.

177. (B) capital budget.
A request for new gymnastics equipment would be part of the capital budget, which focuses on investments in long-term, high-value assets. Unlike operational budgets that cover routine daily expenses, capital budgets are for items that will benefit the department for several years. Properly managing capital expenditures ensures that the organization has the necessary infrastructure and equipment to deliver high-quality sports programs. This strategic financial planning is essential for protecting the department's assets and providing modern facilities for physical education and athletic activities.

178. (A) In-service training
Organizing a workshop on using technology in the classroom is a classic example of in-service training, a supervisory technique aimed at professional development. These programs provide teachers with opportunities to learn new skills and stay current with educational trends. By facilitating ongoing training, supervisors support continuous improvement in instruction and help educators refine their methods. In-service training is a proactive way to raise teaching

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standards across the department, ensuring that the physical education program remains innovative and effective for students.

179. (C) management of records.
Keeping a logbook of repairs on a swimming pool's filtration system is a vital part of record management in facility management. This documentation provides a historical log of maintenance activities, which is essential for planning future repairs and ensuring safety compliance. Accurate records also help justify budget requests and track the performance of specialized equipment. Proper record-keeping is a professional administrative task that protects institutional assets and ensures that all maintenance work is documented for operational transparency and legal accountability.

180. (D) Technical skills
A sports manager who is knowledgeable in marketing, contract law, and financial analysis possesses strong technical skills. These skills involve the ability to use specialized knowledge and procedures within specific areas of sports administration. While human and conceptual skills are vital for leadership, technical competence ensures that specialized tasks are performed accurately and professionally. Managers must have a baseline of technical knowledge to effectively supervise their staff and to make informed decisions about complex organizational and financial matters in the athletic industry.

181. (C) ensure no task is overlooked during planning and preparation.
A pre-event checklist is used by event managers to ensure that every necessary task is accounted for and completed during the planning and preparation phase. This tool provides a systematic way to track progress and coordinate various teams, preventing important details from being overlooked in the lead-up to the event. By using a checklist, organizers can maintain control and ensure that everything is ready for a professional and successful competition or ceremony, providing a better experience for participants and guests.

182. (B) To inform the public and generate interest and support.
A primary function of mass media in sports is to inform the public and generate interest and support for events and programs. By disseminating information broadly, media channels raise awareness and highlight athletic achievements. This broad reach is essential for building a fan base and securing community and institutional support. Media coverage also provides role models and educates the public about the benefits of physical activity, contributing to a culture of health and fitness while promoting the sports organization's success.

183. (D) an employee should receive orders from only one superior.
The principle of 'Unity of Command' suggests that each employee should receive orders from and report to only one superior. This clarity in authority prevents confusion and conflicting instructions, which can lead to inefficiency and conflict within the organization. By maintaining a clear line of command, the organization ensures that tasks are coordinated effectively and that everyone knows their specific responsibilities. This principle is fundamental for maintaining discipline and order in any professional administrative setting, including sports and physical education departments.

184. (A) Eisenhower Matrix
The Eisenhower Matrix is a time management tool used to categorize tasks by their urgency and importance. By organizing work into four quadrants—urgent and important, important but not urgent, urgent but not important, and neither—administrators can prioritize their time more effectively. This structured approach helps leaders focus on critical strategic goals rather than just reacting to immediate demands. Using the matrix reduces stress and improves productivity, allowing sports managers to manage their complex daily responsibilities in a more professional and efficient manner.

185. (C) planning and control.
A budget serves as a primary tool for both planning and control within an organization. It allows managers to plan for future income and expenditures, setting a clear roadmap for organizational activities. As the fiscal

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period progresses, the budget acts as a control mechanism, allowing administrators to compare actual spending against their plans and make necessary adjustments. This dual function ensures fiscal responsibility and transparency, helping the sports department achieve its goals within the limits of its available financial resources.

186. (A) A supervisor should dictate all teaching methods without discussion.
A supervisor's role is to provide guidance and support rather than dictating methods without discussion. Supervision should be democratic and collaborative, encouraging professional dialogue between the supervisor and the teacher. By helping teachers solve problems and promoting a spirit of inquiry, supervisors foster a positive environment for professional growth. Dictatorial command-based approaches are inconsistent with modern supervisory principles, which emphasize shared decision-making and instructional leadership to achieve the best possible outcomes for students and the entire physical education program.

187. (D) Procurement
Procurement is the comprehensive process of acquiring a new facility, encompassing everything from initial concept and feasibility studies to construction and final handover. It involves managing the financial, legal, and operational aspects of obtaining the infrastructure and necessary equipment. Effective procurement requires careful coordination and strategic planning to ensure that the final asset meets the organization's needs and is obtained efficiently. This stage is critical for establishing the foundation of high-quality sports programs and ensuring institutional resources are used responsibly.

188. (B) Decisional
Taking decisive action in a crisis, such as a major injury, falls under the 'Disturbance Handler' role, which is a decisional category according to Mintzberg. This role involves making immediate choices and taking action to restore order and address unexpected problems. Decisional roles are critical for organizational leadership because they move from processing information to taking concrete steps that impact the institution. A sports manager must be prepared to handle these disturbances professionally to ensure the safety of participants and the stability of the organization.

189. (C) the plan is put into action.
The execution phase is the specific stage of event management where the developed plan is put into action. During this time, staff and volunteers carry out their assigned duties to conduct the event, whether it is a tournament, ceremony, or sports meet. Successful execution requires real-time coordination and the ability to adapt to any challenges that arise during the event. This phase is the culmination of all prior planning and preparation, focusing on delivering a professional and safe experience for everyone involved.

190. (D) public relations.
Sending a press release to announce a victory is an activity related to public relations. This strategic communication aims to share news, build institutional pride, and maintain a positive image with the public. Public relations focuses on managing the organization's reputation and ensuring that its achievements are broadly recognized. By sharing success stories through media channels, sports departments can build community interest and support. This ongoing effort in relationship management is vital for the long-term success and positive perception of any sports institution.

191. (A) Progression
The principle of progression in organizing sports programs ensures that activities cater to beginners, intermediate, and advanced participants through a logical sequence of skill development. This approach allows every student to improve at their own pace and prevents frustration or injury. By offering a progressive curriculum, physical education institutions can ensure that their programs are inclusive and effective for all participants. This sequential development is a hallmark of professional program design, fostering long-term interest in physical activity and supporting holistic student development through sports.

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192. (B) Essential Administrative Skill - Effective problem-solving.
Effective problem-solving is an essential administrative skill that allows managers

to navigate challenges and find successful solutions. While skills like communication and time management are also vital, the ability to analyze a problem and make a decisive choice is fundamental to organizational leadership. Successful administrators must avoid procrastination and blame, instead focusing on proactive strategies to achieve their goals. By mastering these core skills, sports managers can lead their departments more effectively, foster a productive work environment, and ensure the long-term success of their programs.

193. (B) budgeting is a forward-looking plan, while auditing is a backward-looking verification.
The primary difference between budgeting and auditing lies in their time orientation. Budgeting is a forward-looking plan that estimates future income and expenditures to guide organizational activities. Auditing, conversely, is a backward-looking process that verifies past financial records for accuracy and compliance. Together, they provide a comprehensive system for financial management, with budgeting setting the roadmap and auditing ensuring that the plan was followed correctly. Both processes are essential for maintaining fiscal responsibility, transparency, and institutional accountability within sports organizations.

194. (A) bridge the gap between educational theory and practice.
The importance of supervision lies in its potential to bridge the gap between educational theory and classroom practice. By providing guidance and support, supervisors help teachers apply pedagogical concepts in their daily instruction. This process focuses on professional growth rather than paperwork or anxiety, ensuring that the physical education curriculum is delivered effectively. Ongoing supervision helps educators refine their methods and adapt to new challenges, ultimately leading to higher standards and better learning outcomes for all students in the physical education program.

195. (C) ventilation, humidity control, and water quality management.
Planning for an indoor swimming pool requires specialized considerations for ventilation, humidity control, and water quality management. These elements are vital for maintaining a healthy and comfortable environment for users and protecting the facility's structure from moisture-related damage. Unlike outdoor maintenance, which focuses on weather, indoor pool management requires technical expertise in climate and chemical systems. By integrating these systems into the initial design, facility managers can ensure safety, longevity, and a high-quality experience for all athletes and community members using the pool.

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196. (D) Scanning the external environment.
When a sports manager attends a conference to learn about new trends, they are acting in the monitor role by scanning the external environment. This informational role involves gathering relevant data about the broader sports industry to inform organizational decisions. By staying informed about new marketing strategies or technological advancements, the manager can proactively adapt the organization's programs and remain competitive. Monitoring the external environment is essential for strategic planning and ensuring that the sports department stays current with best practices and emerging industry trends.

197. (C) Initial planning and budgeting.
Reporting and follow-up procedures are the final stages of event management, focusing on financial reconciliation, acknowledging participants, and evaluating overall performance. Initial planning and budgeting occur at the beginning of the process and are not part of the post-event evaluation. By professionally closing out an event through reporting and follow-up, organizers can document lessons learned and build goodwill with sponsors and volunteers. This final evaluation is vital for organizational accountability and providing the data needed to improve future institutional sports events and competitions.

198. (B) practical experience in media relations.
An ideal qualification for a Public Relations Officer includes a relevant academic degree combined with practical experience in media relations. This experience provides the technical skills needed to manage an organization's image and interact effectively with journalists. PR is a specialized field that requires a deep understanding of communication strategies

and the ability to navigate public scrutiny. By combining theoretical knowledge with hands-on experience, the officer can effectively represent the sports organization and ensure its achievements are communicated clearly and positively to the general public.

199. (D) it involves a series of interrelated functions.
Management is considered a process because it involves a continuous series of interrelated functions, such as planning, organizing, leading, and controlling. These functions work together in a systematic way to achieve organizational objectives. It is not a one-time activity but an ongoing cycle that adapts to changing circumstances. In physical education, this process ensures that all resources are coordinated effectively to deliver high-quality programs. By understanding the process nature of management, administrators can better manage the complexity of their daily duties and strategic long-term goals.

200. (A) To ensure that the organization's human resources are used in a way that effectively accomplishes its goals.
A primary objective of personnel management is to ensure that the organization's human resources are utilized effectively to accomplish institutional goals. This involves attracting the right talent, providing professional development, and maintaining high employee morale. By focusing on human capital, sports departments can build a skilled and motivated team capable of delivering excellent athletic and physical education programs. Effective personnel management is essential for creating a positive work culture and ensuring that everyone within the organization is committed to achieving shared objectives.

201. (C) Principle of Totality
The Principle of Totality in budgeting states that a budget should be comprehensive, covering all aspects of the organization's planned activities for the period. Every anticipated source of income and all expected expenditures should be included to provide a complete financial picture. This ensures that no part of the organization's operation is overlooked and provides a clear roadmap for all departments. By creating a total budget, administrators can maintain institutional control and ensure that financial resources are allocated strategically to support the entire range of sports programs.

202. (A) Supervision should be a source of anxiety and fear for teachers.
Modern supervisory principles emphasize that supervision should be a planned, democratic, and cooperative activity based on objective evidence. It should never be a source of anxiety or fear; instead, it provides professional support and guidance for teacher development. By fostering a positive and collaborative environment, supervisors can more effectively help educators improve their methods. This supportive approach is essential for maintaining high instructional standards in physical education and creating a climate where teachers feel empowered to innovate and grow professionally for student benefit.

203. (D) determine the needs and goals of the school and community.
The first step in planning a new sports complex must be to determine the specific needs and goals of the school and the surrounding community. This foundational phase, often called a needs assessment, ensures that the final design and budget are aligned with the intended usage and community priorities. By gathering this data early, facility managers can avoid building inadequate or underutilized structures. A thorough assessment provides the roadmap for all subsequent design and construction decisions, ensuring the project is a valuable and sustainable community asset.

204. (B) Effectively resolving a conflict between two team members.
Resolving a conflict between team members is a primary example of human skill in action. Human skill involves the ability to work effectively with individuals and groups to foster cooperation and motivation. In sports management, this interpersonal ability is vital for building a cohesive team and maintaining high morale. By managing disputes and communicating effectively, leaders can create a positive work environment where everyone is focused on common goals. This skill is essential for successful administration at all levels of a professional sports organization.

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205. (C) the actual conducting of the scheduled games and ceremonies.
The execution of a sports meet refers to the actual conducting of the scheduled games, competitions, and ceremonies according to the plan. This phase is when all prior planning and preparation are put into practice. During execution, organizers and staff manage the daily logistics and address any real-time issues to ensure the event proceeds smoothly. This stage is the culmination of the management process, focusing on delivering a professional and safe experience for all athletes, officials, and spectators involved in the institutional sports competition.

206. (D) the management function that establishes and maintains mutually beneficial relationships between an organization and its publics.
Public relations is the management function that establishes and maintains mutually beneficial relationships between an organization and the various publics it serves. It focuses on building trust, goodwill, and a positive image through strategic communication. PR is broader than simple advertising; it involves listening to stakeholders and ensuring the organization's actions align with public interests. In sports, effective PR helps secure community support and builds a lasting reputation for integrity and excellence, which is essential for the long-term success of the physical education program and institution.

207. (A) kindliness and justice in the behavior of managers towards subordinates.
The classical management principle of 'Equity' refers to the importance of managers treating their subordinates with kindliness and justice. This fair treatment fosters a positive work environment and improves employee loyalty and commitment. Equity suggests that while managers must be firm, they must also be fair and impartial in their interactions. In a sports department, applying equity helps build a cohesive team culture where every staff member feels valued and respected. This principle is essential for maintaining professional harmony and achieving high productivity across the organization.

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208. (B) effective delegation.
Effective delegation involves assigning tasks while providing the necessary instructions, resources, and authority for completion. This core administrative skill allows managers to focus on strategic planning while empowering staff and fostering their professional development. By communicating clear expectations, the administrator ensures that the work is performed successfully without micromanagement. Delegation is vital for improving departmental efficiency and productivity in sports administration, as it utilizes the full range of expertise within the team and allows the organization to achieve its long-term objectives more effectively and timely.

209. (B) requisition or identification of a need.
The mechanics of purchase typically begin with the identification of a specific need and the creation of a formal requisition. This initial step ensures that all purchases are necessary and aligned with the organization's objectives before funds are committed. Once the need is established, the process follows structured steps like inviting quotes and issuing purchase orders. Starting with identification prevents wasteful spending and ensures that the sports department obtains the equipment and services it truly needs to support its programs effectively and responsibly.

210. (A) Autocratic
A supervisor who dictates specific methods without room for discussion is using an autocratic style of supervision. This top-down approach focuses on control and compliance rather than collaboration and professional growth. While it may lead to quick decision-making, it can also damage morale and discourage teacher innovation. Modern supervisory principles generally favor a more democratic and cooperative approach, where supervisors and educators work together to improve instruction. An autocratic style is often seen as less effective for fostering long-term professional development and excellence in physical education.

211. (C) regular mowing, watering, and aeration.
Maintenance of an outdoor natural grass field requires consistent care, including regular mowing, watering, and aeration to keep the

administrators can ensure that both urgent and important goals are achieved without constant crisis management. This professional skill improves productivity and allows leaders to dedicate sufficient time to strategic planning and personal well-being. Ultimately, systematic time management fosters a more effective work environment and ensures the sports program is managed responsibly and professionally, leading to higher institutional quality.

225. (B) External auditing
External auditing is the process where an independent body verifies the financial records and accounts of a sports organization to ensure they are accurate and fair. This process provides an essential check on the organization's fiscal health and ensures transparency for stakeholders and donors. Unlike internal audits, external audits provide a higher level of impartial verification. By conducting regular external audits, institutions demonstrate their commitment to financial integrity and legal compliance, ensuring that funds are managed appropriately and that the organization remains respected and sustainable.

226. (A) Collaborative action research
Collaborative action research is a modern, democratic technique of supervision where supervisors and teachers work together to investigate and improve instructional practices. This approach encourages professional dialogue and empowers educators to take an active role in their own professional development. By focusing on shared problem-solving rather than fault-finding, action research fosters a positive work climate and leads to more meaningful and lasting improvements in instruction. This collaborative spirit is essential for building a dynamic and effective physical education program that is responsive to student needs.

227. (C) universal design for accessibility.
Planning for sports infrastructure should integrate the principles of universal design to ensure that facilities are accessible to everyone, regardless of their physical ability. This inclusive approach ensures that the entire community can benefit from sports and physical activity. By prioritizing accessibility during the initial design phase, managers can avoid costly retrofitting later and demonstrate a commitment to equity. Universal design is a hallmark of professional facility management, ensuring that sports environments are welcoming and functional for all participants, aligning with broader institutional goals of social inclusion.

228. (D) Leader
A manager fulfilling the interpersonal role of a leader focuses on inspiring and motivating employees to achieve organizational goals. This role involves setting a vision, building teams, and providing the support needed for staff to succeed. Effective leadership is vital for creating a positive professional climate and ensuring everyone within the sports department is committed to shared objectives. By acting as a role model and mentor, the manager can foster professional growth and improve overall departmental productivity, which is essential for the long-term success of institutional sports programs.

229. (C) building long-term relationships.
A follow-up letter to a sponsor after a successful event is a critical part of building and maintaining long-term relationships. This expression of gratitude demonstrates professionalism and acknowledges the sponsor's contribution to the sports program's success. By nurturing these connections, event managers can secure future support and foster a network of community goodwill. Relationship management is a fundamental part of public relations and event follow-up, ensuring that the organization remains respected and supported by its stakeholders, which is vital for the continued growth of institutional athletic activities.

230. (B) write clearly, speak persuasively, and build relationships with the media.
A successful public relations officer must have the ability to write clearly, speak persuasively, and build positive relationships with media representatives. These skills allow them to effectively manage the organization's public image and communicate its mission and achievements to a broad audience. PR is a strategic communication role that requires a high degree of interpersonal and professional competence. By mastering these skills, the officer ensures that the sports organization is well-represented in the public sphere, which is essential for building

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department can fund its programs and facilities while maintaining long-term fiscal stability and institutional transparency for stakeholders.

218. (A) enhance student learning and development.
The ultimate aim of supervision in physical education is to enhance student learning and development through instructional leadership and support for teachers. By providing guidance on teaching methods and curriculum delivery, supervisors help ensure that students receive a high-quality education. Supervision is not an administrative formality or a way to find fault; its focus is on continuous improvement in the classroom. This student-centered approach ensures that the physical education program achieves its fundamental goals of fostering health, skill, and holistic growth among all participants.

219. (D) planning future maintenance, ensuring safety compliance, and providing legal documentation.
Proper record-keeping for sports infrastructure is essential for planning future maintenance, ensuring compliance with safety standards, and providing necessary legal documentation. Detailed logs of repairs, inspections, and warranties protect the institution's assets and provide accountability for how resources are used. Without accurate records, managers may struggle to justify budget requests or demonstrate that safety protocols were followed. Management of records is a professional administrative task that supports the long-term sustainability and operational efficiency of all sports facilities and programs within the institutional framework.

220. (B) Conceptual skill
Conceptual skill becomes increasingly important at higher levels of management, allowing administrators to think strategically about the organization as a whole. This skill involves understanding the complex interrelationships between different departments and recognizing how decisions impact the institution's long-term goals. While technical and human skills remain relevant, conceptual skill is vital for making major policy choices and navigating significant organizational changes. By viewing the "big picture," top-level sports managers can guide their institutions toward sustained success and ensure their programs remain strategically aligned with community needs.

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221. (C) detailed schedule or timeline.
An event itinerary functions as a detailed schedule or timeline, providing a minute-by-minute account of planned activities. In sports management, it ensures that all stakeholders, from athletes to volunteers, are synchronized and aware of their responsibilities at specific times. By detailing the sequence of events, an itinerary helps maintain organizational control and prevents confusion. This level of planning is essential for the smooth and professional execution of tournaments, tours, and ceremonies, ensuring that all logistical details are accounted for and that the event proceeds on time.

222. (D) Public relations
Using social media to interact with fans and share behind-the-scenes content is a modern form of public relations. This strategic communication aims to build a positive image, foster fan engagement, and maintain a strong relationship with the public. Public relations focuses on managing the organization's reputation and ensuring its mission and achievements are broadly recognized. By utilizing digital platforms, sports departments can reach a wider audience and build a community of support, which is essential for the contemporary success and visibility of any institutional sports program.

223. (A) Order
The management principle of 'Order' advocates that there should be a place for everything and everyone, and that everything should be in its place. This principle emphasizes organizational neatness and the efficient arrangement of resources and personnel to improve productivity. In a sports department, maintaining order in facility usage and equipment storage prevents confusion and speeds up task completion. By applying this principle, managers create a more structured and efficient work environment, which is essential for managing the complex daily operations and logistics of modern athletic and physical education programs.

224. (B) improved focus, reduced stress, and better work-life balance.
Effective time management for a sports administrator leads to improved focus, reduced stress, and a better overall work-life balance. By prioritizing tasks and using time efficiently,

surface safe and playable. These tasks are essential because natural grass is a living organism that is constantly affected by weather and usage. In contrast, artificial turf fields do not require these activities but have their own maintenance needs like infill replacement. Understanding these environmental requirements is crucial for facility managers to allocate resources effectively and ensure that all athletic surfaces remain in optimal condition for competitive and recreational sports.

212. (D) Resource Allocator
A manager deciding on a budget is performing the decisional role of a resource allocator. This role involves making strategic choices about how to distribute limited financial, human, and material resources to best achieve the organization's goals. Effective resource allocation ensures that critical programs are funded and that every department has what it needs to succeed. This function is fundamental to financial management in sports, ensuring that the budget supports the most important institutional priorities and maintains the long-term sustainability of the physical education program.

213. (C) To practice key moments of the event to ensure smooth execution.
The purpose of an event rehearsal is to practice key moments, such as ceremonies or major transitions, to ensure a smooth and professional execution on the day of the event. Rehearsals allow organizers and participants to identify timing issues and coordinate roles in a controlled environment. By working through the schedule beforehand, the management team can resolve potential problems and build confidence among the staff and volunteers. This preparation is essential for delivering a high-quality experience for everyone involved in complex sports events and tournaments.

214. (B) Public relations and communication
Activities like issuing press kits, holding press conferences, and managing social media are all central to public relations and communication. These tasks aim to build a positive public image, raise awareness, and maintain strong relationships with fans and external stakeholders. PR focuses on strategic messaging and transparent communication to foster goodwill between the organization and the public. In a sports context, this is essential for generating excitement, securing community support, and ensuring that the organization's achievements are communicated professionally to a broad and diverse audience.

215. (D) a wide range of functions including planning, organizing, staffing, directing, and controlling.
The scope of management in sports is wide, encompassing a full range of functions from planning and organizing to staffing, directing, and controlling all aspects of the organization. It goes far beyond just coaching or marketing to include every administrative detail needed to run a successful program. This comprehensive approach ensures that all resources are used effectively to achieve both athletic and institutional goals. By managing these diverse functions, administrators provide high-quality programs and foster a professional environment that supports the holistic development of all participants.

216. (A) employee development and performance improvement.
Creating performance feedback systems like self-appraisal and peer review serves the primary objective of employee development and performance improvement. These processes encourage personnel to reflect on their work and identify areas for growth, fostering a culture of continuous learning. By providing constructive feedback rather than just punishment, sports organizations can build a more skilled and motivated workforce. This supportive approach to personnel management leads to better professional outcomes for coaches and staff, ultimately improving the quality and effectiveness of the entire physical education and sports program.

217. (C) Budget
A budget is a financial statement that provides an estimate of income and expenditure for a future period. It serves as a vital tool for organizational planning and control, helping administrators allocate resources to their most important goals. By establishing a clear financial roadmap, the budget ensures accountability and provides a benchmark for evaluating financial performance. In sports management, a well-prepared budget is essential for ensuring that the

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trust and securing widespread institutional and community support.

231. (D) Planning
The "P" in the management acronym "POSDCORB" stands for Planning, which is the foundational function of determining what needs to be done and how to achieve it. Planning involves setting goals, identifying resources, and developing a roadmap for organizational activities. Without effective planning, other functions like organizing and controlling cannot be carried out successfully. In sports management, planning ensures that physical education programs and events are well-conceived and aligned with the institution's primary objectives. It is a critical first step in professional administrative management across all domains.

232. (A) create and maintain a high level of employee morale.
An objective of personnel management is to create and maintain high employee morale by fostering a positive and supportive work environment. High morale is linked to increased productivity, better teamwork, and higher employee retention. By prioritizing staff welfare, providing professional development, and treating everyone fairly, sports organizations can build a committed and effective team. Effective personnel management recognizes that human capital is a vital asset, and that a motivated workforce is essential for the long-term success and sustainability of the physical education and sports program and institution.

233. (C) Consistency
The principle of consistency in financial management dictates that the same accounting methods and reporting formats should be used from one period to the next. This allows for meaningful comparisons of financial performance over time and ensures that trends can be accurately identified. Consistency provides transparency and reliability for stakeholders reviewing the sports organization's financial records. By adhering to this principle, administrators can demonstrate professional integrity and ensure that the institution's fiscal management remains structured, predictable, and accountable across multiple years of operation and athletic programming.

234. (A) providing constructive feedback.
A primary responsibility of a supervisor is providing constructive feedback to teachers to support their professional growth and improve instructional quality. This feedback should be specific, supportive, and focused on helping educators refine their methods. By fostering a culture of open communication and professional development, supervisors can maintain high educational standards across the department. This guidance is essential for ensuring that students receive the best possible physical education, and it helps build a professional environment where staff members feel valued and empowered to achieve their potential.

235. (D) obtaining or acquiring the facility and equipment.
In the context of facility management, 'procuring' refers specifically to the process of obtaining or acquiring the facility and its necessary equipment. This phase involves managing the financial, legal, and operational steps needed to make the infrastructure ready for use. It includes everything from purchasing land to securing construction contracts and equipment deliveries. Effective procurement requires careful coordination and strategic planning to ensure that all assets are acquired within budget and according to specific institutional needs, establishing a solid foundation for the organization's sports and physical education activities.

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236. (B) maintaining a network of outside contacts who provide information and favors.
The managerial role of a liaison involves building and maintaining a network of outside contacts who can provide valuable information and support for the organization. This interpersonal role is essential for gathering external insights and securing resources that may not be available internally. In sports management, a liaison may work with other institutions, sports federations, or community groups to foster cooperation. By maintaining these external relationships, the manager ensures that the organization remains well-connected and can capitalize on opportunities that support the overall success of its athletic programs.

237. (C) Planning → Execution → Reporting
The correct sequence of event management processes begins with planning to define goals and resources, followed by the execution phase where the plan is put into action. Finally, the reporting stage involves documenting the event's outcomes, attendance, and financial status for accountability and future learning. This logical progression ensures that the event is well-organized, professionally conducted, and thoroughly evaluated. By following this structured approach, sports administrators can manage complex events effectively and use each experience to improve future athletic and physical education activities for the benefit of all involved.

238. (D) Internal departmental memos
Mass media channels used for sports publicity include television, radio, newspapers, and the internet, all of which reach a broad, external audience. Internal departmental memos are tools for organizational communication rather than mass media publicity. Publicity aims to raise awareness and build interest among the general public through non-paid media coverage. By utilizing diverse mass media channels, sports organizations can showcase achievements and secure community support. Internal memos serve a vital but different purpose, focusing on coordinating activities and sharing information among staff within the physical education department or institution.

239. (A) influencing and motivating employees to achieve organizational goals.
'Leading' in management is the function of influencing and motivating employees to work together toward the organization's objectives. This role involves setting a clear vision, providing support, and fostering a positive work environment where staff feel empowered. Effective leadership is vital for building a cohesive team and ensuring high morale within the sports department. By guiding and inspiring others, managers can improve institutional productivity and achieve better outcomes. Leadership is a dynamic interpersonal process that is essential for the successful administration of any high-quality physical education and athletic program.

240. (B) Problem-solving and decision-making
Problem-solving and decision-making are essential administrative skills that involve analyzing challenges, identifying potential solutions, and choosing the most effective course of action. These skills are vital for navigating the complex daily operations and strategic goals of a sports organization. Successful administrators must be able to make decisive choices under pressure and find creative solutions to unexpected problems. By mastering these core competencies, sports managers can lead their departments more effectively, maintain organizational stability, and ensure the long-term success and sustainability of their athletic and physical education programs and institutions.

241. (B) To ensure all financial data is kept hidden from stakeholders.
The purpose of financial management in sports is to ensure that adequate funds are available, used effectively, and managed securely. Transparency and accountability are fundamental, and financial data should be shared with relevant stakeholders rather than kept hidden. Strategic financial management provides a roadmap for organizational activities and ensures that resources are used responsibly to further institutional goals. By maintaining clear records and providing honest reporting, sports administrators can build trust with donors, community members, and internal staff, which is essential for the long-term growth and success of the program.

242. (A) help orient new teachers to the school system and curriculum.
A key duty of a supervisor is helping orient new teachers to the school system and the physical education curriculum. This initial support is vital for helping new staff members adjust to their roles and understand institutional expectations. By providing guidance on instructional standards and resources, supervisors ensure that the curriculum is delivered consistently from the start. This orientation is a foundational part of professional development, helping to build a skilled and confident teaching team that can provide high-quality education to all students in the physical education program and department.

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243. (C) It provides a historical account for legal, safety, and planning purposes.
Management of records for a sports facility is important because it provides a comprehensive historical account for legal, safety, and planning purposes. Detailed logs of maintenance, safety inspections, and usage patterns are essential for ensuring compliance with regulations and protecting the institution's assets. These records also inform future planning for repairs or upgrades, providing data-driven evidence for budget requests. Professional record-keeping ensures accountability and operational efficiency, making it an indispensable part of successful facility management within any sports and physical education organization or institutional framework.

244. (D) understand the overall workings of the organization and its environment.
Conceptual skills allow a manager to understand the overall workings of the organization and how it fits into the broader environment. This skill involves thinking strategically and recognizing how decisions in one area affect the institution as a whole. While technical and human skills are important, conceptual skills are vital for top-level leadership and strategic planning. By viewing the organization holistically, sports administrators can guide their programs toward long-term success and ensure that they remain responsive to community needs and industry trends in a professional and effective manner.

245. (C) Follow-up
The follow-up phase is the final step in the event management process, designed to solidify relationships with sponsors and volunteers while providing data for future planning. This stage involves settling accounts and expressing gratitude, which fosters goodwill and ensures long-term community support for the sports program. By professionally closing out an event, managers can document successes and challenges, providing a valuable foundation for continuous organizational improvement. This final evaluation is vital for institutional accountability and ensures that each sports activity contributes to the organization's long-term goals and sustainability.

246. (B) It is a two-way exchange to build mutual understanding and goodwill.
In public relations, communication is a two-way exchange designed to build mutual understanding and goodwill between the organization and its public. It involves both disseminating information and listening to stakeholder concerns to ensure the organization remains responsive to community interests. PR is not a one-way propaganda tool but a strategic process of relationship-building based on transparency and trust. By engaging in honest and open communication, sports organizations can secure lasting support and build a respected institutional image, which is essential for the long-term success and growth of physical education programs.

247. (D) specialization and increased efficiency.
The principle of 'Division of Labour' is important in management because it leads to specialization and increased efficiency across the organization. By breaking down complex tasks into smaller parts, individuals can focus on their specific areas of expertise, which improves productivity and reduces errors. In sports management, this means assigning specialized roles to coaches, administrators, and support staff. This structured approach ensures that resources are used effectively and that the athletic department can achieve its goals more quickly and professionally, ultimately benefiting the entire institution and its physical education programs.

248. (A) objective criteria and job requirements.
The principle of scientific selection in personnel management dictates that employee recruitment should be based on objective criteria and specific job requirements rather than personal bias or favoritism. By using a structured and fair selection process, organizations can ensure they hire the most qualified and capable individuals for each role. This professional approach improves institutional efficiency and fosters a more competent and committed workforce. In a sports context, scientific selection is vital for building high-performing teams of coaches and administrators who can deliver the best results for the entire physical education program.

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complex human and conceptual abilities are built to lead the organization effectively at higher levels.

280. (D) A manager needs a blend of technical, human, and conceptual skills to perform interpersonal, informational, and decision-making roles.
Effective sports management requires an integrated approach where various managerial roles are supported by a diverse set of skills. A manager must possess a blend of technical, human, and conceptual abilities to successfully navigate their interpersonal, informational, and decisional responsibilities. This multifaceted skill set allows them to lead teams, manage data, and make strategic decisions that drive the overall success of the sports organization.

281. (A) To identify and mitigate potential problems in a controlled setting.
Rehearsals serve as a crucial step in event management by allowing organizers to run through key procedures and test equipment before the actual event begins. This proactive approach helps identify potential logistical issues or technical malfunctions in a controlled environment. By simulating the event, managers can refine their plans and mitigate risks, ensuring a smoother and more professional execution during the live implementation.

282. (B) The use of reporting and follow-up to inform future planning.
Event management is described as a cyclical process because the final stages of reporting and follow-up directly inform the planning of future events. By analyzing successes and failures, gathering stakeholder feedback, and compiling detailed reports, organizers create a feedback loop of continuous improvement. This systematic learning ensures that each subsequent event is more efficient and effective than the previous one, building institutional knowledge.

283. (B) A checklist.
A checklist is a critical tool used during the planning phase of event management to ensure that every task, responsibility, and deadline is itemized and accounted for. It prevents important details from being overlooked in the complex process of organizing a sports event. By following a structured checklist, managers can track progress systematically and ensure that all necessary logistical and administrative requirements are met on time.

284. (A) Adaptability and effective problem-solving skills.
The execution phase of event management involves the live implementation of the plan, which often presents unforeseen challenges. Consequently, this stage requires organizers to possess high levels of adaptability and quick problem-solving skills to address issues as they arise. While thorough planning provides a strong foundation, the ability to respond effectively to real-time changes is essential for maintaining the flow and success of the event.

285. (C) Executing the live implementation of the plan.
Post-event procedures focus on evaluating the outcome and ensuring organizational learning after the activities have concluded. This includes compiling financial and attendance reports, gathering feedback from stakeholders, and analyzing performance to improve future planning. In contrast, the live implementation of the plan occurs during the execution phase, which precedes the reporting and follow-up stage in the event management cycle.

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286. (D) Engaging in consistent two-way communication.
Effective public relations in the sports industry is built upon the principle of consistent two-way communication rather than one-way propaganda. This approach fosters mutual understanding and transparency between the organization and its various publics, such as fans and sponsors. By encouraging a dialogue, sports managers can better understand public perceptions and proactively manage their reputation to build long-term goodwill and supportive relationships.

287. (C) Serve as a channel for communication and publicity to a wide audience.
Mass media platforms, including television, radio, print, and digital channels, serve as primary vehicles for communication and publicity in sports public relations. They allow organizations to reach a broad and diverse audience with positive stories, event promotions, and institutional achievements. By strategically

256. (B) To effectively utilize human resources to meet organizational goals.
Personnel management focuses on the strategic administration of human capital to fulfill the broader objectives of an organization. This process involves recruiting qualified staff, fostering professional growth, and creating a motivating work environment. By optimizing the contributions of coaches, instructors, and administrators, the institution ensures that its human resources are utilized in a way that directly supports its primary mission.

257. (D) Facilitating continuous professional development.
Self-appraisal acts as an internal mechanism for individuals to evaluate their own professional performance and identify areas for growth. This process allows sports administrators and coaches to recognize specific strengths and weaknesses, enabling them to create targeted plans for improvement. As an essential component of professional development, it encourages lifelong learning and ensures that staff skills remain relevant and effective.

258. (A) Conveying expectations, giving feedback, and resolving conflicts.
Communication skills represent the fundamental bedrock of effective personnel management within sports organizations. These skills are essential for administrators to clearly articulate expectations to staff, provide constructive feedback on performance, and mediate interpersonal conflicts. Without clear and transparent communication, the coordination of diverse teams becomes difficult, potentially hindering the overall success and harmony of the sports department or athletic institution.

259. (C) They are interconnected components of effective administration.
Self-appraisal, communication, and time management are not isolated abilities but function as integrated components of the administrative skill set. These skills work together to enable a sports manager to lead teams effectively and manage human capital strategically. For example, time management allows for proper scheduling, while communication ensures those schedules are followed, and self-appraisal helps refine these administrative practices.

260. (A) Implementing a transparent process for staff training and promotion.
Good personnel management is rooted in principles of fairness, equity, and the promotion of professional growth for all employees. Implementing transparent processes for staff development and career advancement ensures that decisions are based on merit and institutional needs. This approach builds trust within the organization, motivates staff members to improve their performance, and aligns individual career paths with broader organizational goals.

261. (D) To act as a financial blueprint that quantifies organizational goals.
A budget serves as a foundational financial blueprint that translates the strategic goals of a sports organization into measurable financial terms. By quantifying objectives for a specific period, the budget provides a structured plan for the allocation of resources. This document guides administrative decision-making and ensures that the financial activities of the institution are directly aligned with its programmatic priorities.

262. (B) Verifying the accuracy of financial records and ensuring compliance.
Auditing is an essential control mechanism involving the official examination of an organization's financial records to verify their accuracy and integrity. This process ensures that all expenditures align with the approved budget and follow established fiscal regulations. By performing regular audits, sports organizations can safeguard their assets, maintain financial accountability, and protect their institutional reputation through transparent and ethical practices.

263. (C) Ensuring integrity in all financial transactions.
Financial management in sports organizations is guided by core principles such as fiscal responsibility, consistency in accounting, and integrity in all transactions. Maintaining high ethical standards in monetary dealings is crucial for building trust with stakeholders and ensuring the long-term sustainability of the programs. Integrity ensures that funds are used for their intended purposes, preventing mismanagement and enhancing organizational transparency.

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264. (D) Systematic procedures for acquiring necessary goods and services.
The mechanics of purchase refer to the systematic and standardized procedures used by an organization to acquire necessary goods and services. This process involves steps such as identifying needs, obtaining quotes, and finalizing procurement to ensure cost-effectiveness and transparency. In a sports context, these procedures are vital for obtaining quality equipment and infrastructure while maintaining strict adherence to the budget.

265. (A) Ensure financial solvency and the effective delivery of programs.
The primary objective of financial management within a physical education institution is to maintain financial solvency while maximizing program effectiveness. This involves the judicious planning and allocation of monetary resources to support athletic initiatives and educational curricula. By ensuring sustainability, the organization can continue to provide high-quality sports experiences and meet its long-term goals without compromising its financial health or stability.

266. (B) From a traditional inspection model to a collaborative mentorship model.
Modern supervision in physical education has transitioned away from a traditional, authoritative inspection model toward a collaborative mentorship approach. This shift emphasizes cooperative and democratic principles, focusing on supporting the professional growth of teachers and coaches rather than merely identifying faults. This contemporary method fosters a more supportive environment, encouraging staff members to improve instruction through shared dialogue and constructive feedback.

267. (B) A quality control mechanism and a support system.
Supervision serves as both a vital quality control mechanism and a dedicated support system for personnel within physical education departments. It ensures the safe and efficient implementation of the curriculum while providing coaches and teachers with the resources they need for professional development. By monitoring instructional quality, supervision maintains high educational standards and fosters a culture of continuous improvement across the entire program.

268. (A) The clinical supervision cycle.
Clinical supervision is a specific technique that involves a structured cycle consisting of a pre-conference, systematic observation, and a post-conference. This collaborative process allows supervisors to observe instruction in real-time and provide detailed, evidence-based feedback to staff. By utilizing such systematic techniques, supervisors can effectively help teachers and coaches identify specific areas for improvement and implement strategies to enhance student learning.

269. (C) Facilitator and mentor for professional growth.
A supervisor in a physical education context is best characterized as a facilitator and mentor rather than a simple evaluator. Their responsibilities include demonstrating effective teaching strategies, helping staff solve instructional problems, and providing access to professional development opportunities. By acting as a resource provider, they support the continuous improvement of the team, fostering a more effective and collaborative educational environment.

270. (D) Foster the professional growth of teachers and coaches.
One of the main objectives of supervision is to actively foster the professional growth of teachers and coaches. By providing constructive feedback and mentorship, supervisors help staff members enhance their skills and teaching methodologies. This focus on continuous development ultimately leads to improved student learning outcomes and a higher quality of instruction throughout the physical education and sports programs within the institution.

271. (C) To serve as vital tools for planning, risk management, and compliance.
Maintaining detailed records in facility management is essential for effective long-term planning, risk mitigation, and ensuring regulatory compliance. Logs concerning maintenance schedules, safety inspections, and repair histories provide data-driven insights for future budget allocations and infrastructure upgrades. These

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records act as vital administrative tools that protect the organization from legal liabilities while ensuring that sports facilities remain safe for all users.

272. (B) The ongoing maintenance to ensure safety and longevity.
Ongoing maintenance represents the most challenging aspect of facility management because it requires constant attention and systematic execution. Ensuring the safety of users and extending the lifespan of physical assets like gymnasiums and playing fields is a complex, continuous process. Effective maintenance prevents infrastructure deterioration, reduces the risk of accidents, and guarantees that facilities are always ready for instructional or competitive use.

273. (D) It involves the complete lifecycle from planning to maintenance of all physical assets.
Facility management covers the entire lifecycle of physical assets, starting from strategic planning and needs assessment through to procurement and construction. It also includes the critical phase of ongoing maintenance for both indoor and outdoor sports infrastructure. This comprehensive approach ensures that every aspect of the physical environment, including fields, courts, and specialized rooms, is managed to support high-quality sports programs.

274. (A) The specific coaching strategies used in a game.
Systematic management of sports infrastructure directly influences program quality, user safety, and the organization's financial stability through efficient resource allocation. While well-maintained facilities provide the environment necessary for effective training and competition, they do not dictate the specific tactical or technical coaching strategies employed by a coach during a game. Coaching decisions remain a separate element of instructional and competitive sports management.

275. (C) Management of records for risk mitigation.
When a facility manager reviews detailed logs of repair histories and safety inspections, they are actively participating in the management of records for risk mitigation. This process helps identify potential safety hazards before they cause injuries, thereby protecting the institution from legal and financial consequences. Using documented data to ensure facilities meet safety standards is a proactive approach to operational facility management.

276. (A) Disturbance handler.
When a manager addresses and resolves interpersonal conflicts between staff members, they are performing the decisional role of a disturbance handler. This role involves taking corrective action to manage unexpected problems or disputes that could disrupt the organization's functioning. By mediating between coaches, the manager ensures that internal friction does not hinder the collective effort to achieve the sports department's goals.

277. (D) Conceptual skill.
Conceptual skills refer to the cognitive ability to see the organization as a whole and understand the complex interdependencies between its various parts. This "big picture" perspective allows a sports manager to anticipate how changes in one department might affect the entire institution. These skills are fundamental for strategic planning and high-level decision-making, enabling the manager to align specific activities with broader organizational objectives.

278. (B) Monitoring data, disseminating information, and acting as a spokesperson.
The informational role of a sports manager involves the continuous gathering, processing, and distribution of information. As a monitor, the manager scans the environment for relevant data; as a disseminator, they share this information with their team; and as a spokesperson, they represent the organization to external parties. These activities ensure that the department stays informed and maintains clear communication with stakeholders.

279. (C) Technical skill.
Technical skills involve specialized knowledge and proficiency in the specific activities of an organization. In a sports context, understanding training methods, physiological principles, or sport-specific rules constitutes technical expertise. While these skills are essential for entry-level and mid-level management, they provide the foundation upon which more

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249. (C) Rolling budget
A rolling budget is one that is updated on a regular basis, such as monthly or quarterly, so that a 12-month projection is always available for management. This dynamic approach allows the organization to adapt to changing financial circumstances and maintain a continuous planning cycle. Unlike static budgets, rolling budgets provide a more current and flexible view of the institution's fiscal health. In sports management, this method ensures that the department can respond proactively to new opportunities or challenges, maintaining long-term financial stability and strategic alignment with organizational and program goals.

250. (A) To improve the quality of instruction through guidance and support.
A primary responsibility of a supervisor is to improve the quality of instruction by providing guidance and professional support to teachers. This involves instructional leadership, collaborative problem-solving, and offering constructive feedback on curriculum delivery. Supervision should be a proactive process focused on excellence rather than just administrative formalities. By fostering a supportive and innovative professional environment, supervisors ensure that the physical education program remains effective and responsive to student needs, ultimately leading to higher educational standards and better learning outcomes for all participants within the institutional sports framework.

251. (B) To ensure programs are structured learning experiences contributing to holistic development.
Adhering to specific guiding principles ensures that sports programs in educational institutions transition from simple physical activities into structured learning experiences. This systematic approach prioritizes the holistic development of participants by integrating clear objectives and democratic processes. Consequently, management principles help transform recreational play into a comprehensive educational tool that fosters cognitive, social, and physical growth.

252. (A) Extensive, covering strategic planning, event organization, and resource administration.
The management scope within physical education and sports is notably comprehensive, encompassing a wide range of administrative responsibilities. It involves the strategic planning of educational curricula, the organization of both competitive and recreational events, and the administration of specialized sports facilities. Effectively managing these diverse areas requires the integration of human, financial, and physical resources to achieve institutional goals.

253. (C) Adherence to rigid, unchangeable plans.
Effective sports management relies on principles that allow for flexibility and adaptation rather than strict rigidity. While establishing clear objectives and utilizing democratic processes are essential for program organization, maintaining unchangeable plans contradicts the need for responsiveness in dynamic environments. Comprehensive evaluation and flexibility ensure that programs can be adjusted based on participant needs and the assessment of previous outcomes.

254. (D) Controlling.
Controlling serves as a vital management function that involves monitoring progress and implementing mechanisms to ensure organizational activities align with established plans. In the context of a sports meet, this specific function focuses on maintaining financial discipline by ensuring events remain within their allocated budget. This systematic oversight identifies deviations from the financial plan and allows for necessary corrective actions.

255. (C) Achieve predetermined goals by effectively using various resources.
The application of management theories within physical education facilitates a cyclical process of planning, organizing, leading, and controlling. This structured framework aims to optimize the use of human, financial, and physical resources to reach specific predetermined objectives. By applying these theories, institutions can improve efficiency and ensure that their sports programs consistently meet their defined educational and organizational targets.

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utilizing these channels, Public Relations Officers can shape public perception and disseminate important information efficiently to spectators, sponsors, and the community.

288. (B) Deliberate and sustained effort to build positive relationships.
Public relations is defined as a deliberate and sustained effort to establish and maintain mutual understanding and a positive image between an organization and its publics. It is not a reactive or short-term tactic but a proactive strategy for reputation management. This continuous effort involves managing communication channels to build long-term goodwill, ensuring that the sports organization remains well-regarded by its athletes, media, and supporters.

289. (D) A professional coaching certification.
A Public Relations Officer in a sports organization requires specific professional competencies such as excellent communication skills, strategic thinking, and strong media relationships. While a deep understanding of the sports industry is essential for effective messaging, a professional coaching certification is not a required qualification for this administrative role. The PRO focuses on communication and reputation management rather than the technical instruction of athletes or teams.

290. (A) Build goodwill and a strong reputation for the organization.
When a Public Relations Officer launches a campaign highlighting a team's community service, the primary goal is to build long-term goodwill and a positive institutional reputation. Such initiatives demonstrate the organization's values and its commitment to social responsibility beyond athletic competition. By showcasing positive off-field activities, the organization fosters supportive relationships with the local community, which indirectly supports its overall strategic and financial objectives.

291. (C) Successful organization requires the integration of multiple management functions.
The central argument for effectively organizing sports programs is the necessity of integrating various management functions, such as personnel, financial, and facility management. Excelling in just one area is insufficient, as these functions are inherently interconnected. A holistic approach ensures that programs are safe, well-funded, and professionally staffed, ultimately leading to high-quality outcomes that meet the institutional objectives through coordinated administrative effort.

292. (A) The interdependence of event, personnel, financial, and facility management.
The example of planning an intramural league illustrates how different management functions depend on one another for a program's success. An event cannot function without personnel to officiate, a budget to cover costs, and well-maintained facilities for play. This interdependence highlights that a failure in any single area can jeopardize the entire project, emphasizing the need for a comprehensive and coordinated management strategy.

293. (D) A structured event plan and skilled operating staff.
A state-of-the-art stadium has little practical value unless it is supported by a structured event plan and skilled staff to operate it. Facilities are physical assets that require professional management and organized programming to be effective. Without these critical administrative components, even the best infrastructure cannot fulfill its purpose of providing a safe and high-quality environment for sports activities and spectator engagement.

294. (B) Understand how different management functions are coordinated and interconnected.
A manager with a conceptual view understands how various management functions are coordinated and interconnected within the organization. This perspective allows the administrator to see the "big picture" and recognize how changes in personnel or budgeting might impact facility use or event quality. Possessing this foresight is essential for orchestrating different departments in a synchronized manner to deliver effective and high-quality sports programs.

295. (C) A well-funded sports team is provided with poorly maintained, unsafe equipment.
A failure in the integration of management functions occurs when a disconnect exists between related areas, such as financial and

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facility management. For example, a team might have adequate funding but still suffer from unsafe equipment due to poor procurement or maintenance procedures. This scenario demonstrates that having resources is not enough; they must be effectively managed and coordinated across all functions to ensure participant safety and program quality.

296. (D) They are insufficient for high-level leadership and strategic thinking.
While technical skills provide a necessary foundation for understanding sport-specific tasks, they are insufficient for the demands of high-level leadership. Strategic thinking and complex decision-making require conceptual and human abilities that go beyond technical expertise. Effective sports administrators must be able to see the broader organizational context and lead diverse teams, capabilities that are not derived solely from technical proficiency in a specific field.

297. (A) The interpersonal role of a leader and liaison.
Human skills are directly linked to the interpersonal roles of a sports manager, specifically those of a leader and liaison. These skills enable the administrator to communicate effectively, motivate staff, and manage interpersonal dynamics within the team. By leveraging human abilities, a manager can build strong relationships with athletes and stakeholders, which is essential for fostering a collaborative and productive environment within the sports organization.

298. (B) Communication skills are the primary vehicle for applying human skills.
Communication skills serve as the primary vehicle through which an administrator applies their human skills in a management setting. While human skills represent the underlying ability to understand and motivate people, communication is the practical tool used to convey those ideas and feelings. Together, these competencies allow sports managers to provide feedback, resolve conflicts, and maintain the interpersonal harmony required for successful organizational leadership.

299. (B) Effective time management.
Effective time management is the specific competency that allows a sports administrator to balance the competing demands of interpersonal, informational, and decisional roles. Without the ability to prioritize tasks and allocate time efficiently, a manager can easily become overwhelmed by the diverse responsibilities of their position. Disciplined personal management ensures that all critical administrative functions are addressed, maintaining organizational stability and overall program effectiveness.

300. (A) They are leaders who integrate conceptual, human, and personal management skills.
The ideal sports manager is characterized as a leader who successfully integrates conceptual foresight, human empathy, and disciplined personal management. This multifaceted individual moves beyond simple technical expertise to master the complex interpersonal and strategic demands of the role. By combining these diverse skills, the manager can lead teams effectively, make sound strategic decisions, and manage their own time and development to ensure long-term organizational success.

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